



N
D
V

Dominate Microsoft Word
We explain the powerful, time-saving features you never learned



S
f

MAXIMUM PC

MINIMUM BS • APRIL 2004

Do It Yourself!

Our lab experts walk you through 28 essential projects

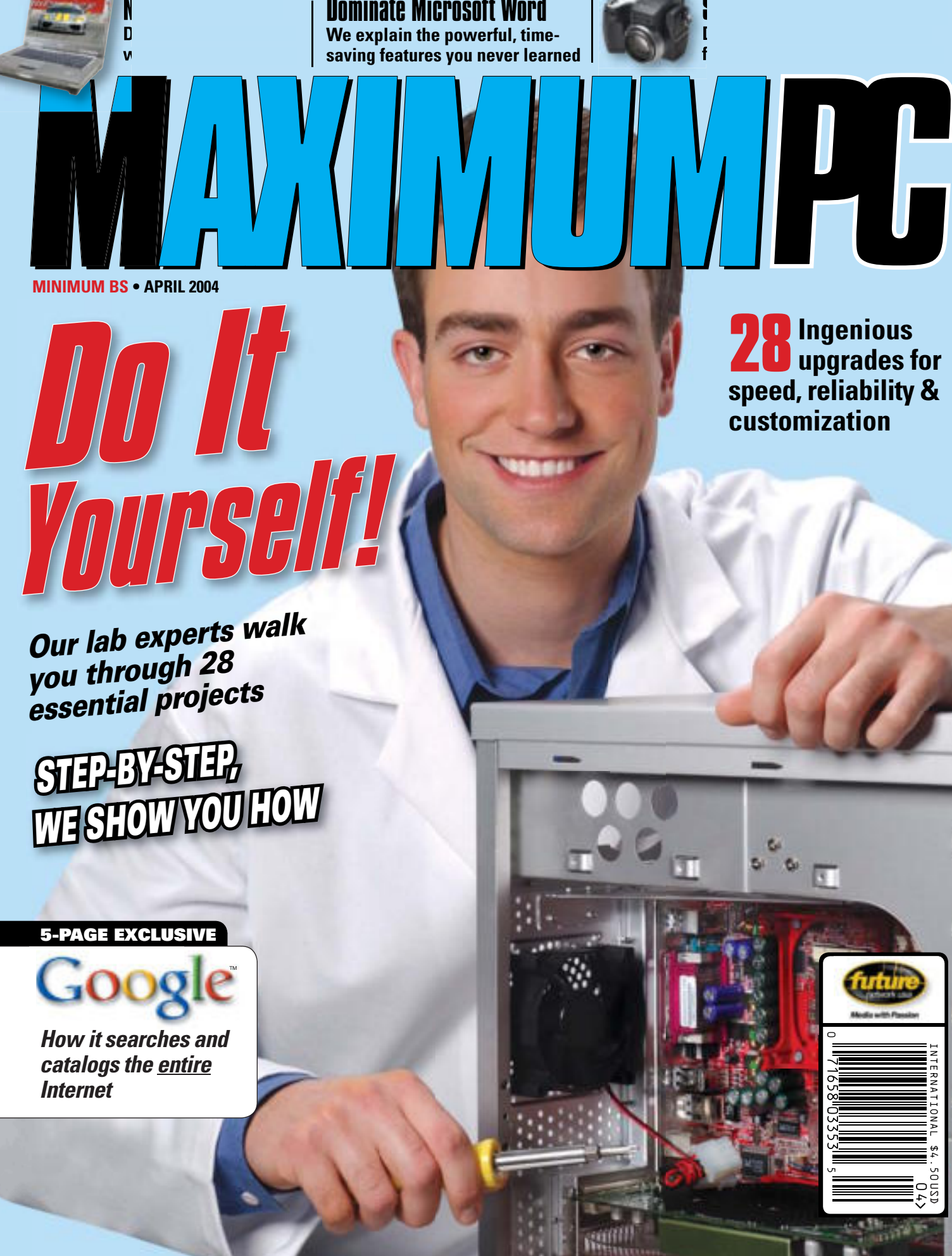
**STEP-BY-STEP,
WE SHOW YOU HOW**

5-PAGE EXCLUSIVE

Google™

How it searches and catalogs the entire Internet

28 Ingenious upgrades for speed, reliability & customization



0 71658 03353 5

5

047

future
network lab
Media with Passion

INTERNATIONAL \$4.50 USD



Release Notes

To the Threshold

As I write this, I'm listening to a car alarm that's been going off for almost three hours. The blaring siren sounds like the videogame Pac-Man, right after the little yellow guy eats a power pellet.

The part of me that loves intricate conspiracy theories can't help but wonder if some PC or component maker, seeking vengeance against us for one of our brutally honest reviews, has decided to punish us psychologically with this torturous noise. *After all*, my own little personal conspiracy argues, *since when do car alarms continue to blare for more than 10 minutes?*

The irony is that if *Maximum PC* were to test people, this is exactly the type of prolonged audio exposure torture test we'd perform. Exploring the upper range of performance, speed, durability, or even volume, is one of our primary missions. It's what sets us apart from the other (and I would say softer) magazines we compete with.

In my first four months as editor in chief, I've seen lab tests that would make the technologically faint of heart cringe, including: a USB torture test in our January issue that subjected USB keys to a two-story drop and the rigors of a washer/dryer cycle; a set of 2.1 speakers that literally blew apart at the apex of our 20Hz-to-22kHz sweep in the March issue; and this month's construction of an extraordinary and quite powerful 12-subwoofer edifice (see page 70).

Outside of our weekly psychological experiments on the interns—and the emotional and gastrointestinal repercussions of a daisy-chained 12-subwoofer tower of sound played at maximum volume and close proximity—we don't perform tests on people, so our lab work shouldn't alarm the Humane Society. But every now and then I get a reader e-mail that asks: Is it fair to subject devices intended for mundane circumstances to such extreme levels of testing?

I say, yes, absolutely, with the reason being that if you're going to maximize the performance of your PC or any of its components, it's imperative to know how much headroom you have. And the only way to know how much room for improvement your videocard, PC, USB key, hard drive, or speakers will allow is to stress-test the upper limits of those parts.

That's where we come in. A great example of our high-end curiosity is this month's power notebook roundup on page 52. We expected great performance from these laptops, so we shucked our normal suite of laptop benchmarks in favor of more strenuous tests.

Ditto the subwoofers: Our curiosity drove us to see how scalable they really are. Alas, the speakers are no longer for sale, but we were able to determine something extremely important: They definitely drown out the sound of a car alarm.

—GEORGE JONES

george@maximumpc.com

Contents

04.04

REGULARS



Page 13:
Easter Eggs
in games



Page 20:
Inkjet vs. laser



Page 22:
Is your
Apple iBook
acting up?

6 In/Out

See the winning tips of our Windows Tips contest, and other illuminating tidbits.

11 Quick Start

PC previews, news, factoids... and a revolutionary way to display digital information.

20 Head2Head

Will your next color printer use "lasers"? We pit an inkjet against what has now become an affordable alternative.

22 WatchDog

Internet fraud, porn pirates, Athlon tampering, product recalls... We let the dog out!

62 Ask the Doctor

Our Doc's not a real doctor, he plays one in this magazine... and so far there have been no lawsuits.

66 How To...

Make Word work for you by exploiting some of its hidden tricks and treasures.

104 Rig the Month

In the most unlikely of alliances, case-modding and romance pair up to win a woman's heart.

REVIEWS

72 Desktop PC: iBuyPower Gamer Extreme

74 External soundcard: Philips Aurilium

74 External soundcard: Creative Audigy 2 NX

76 LCD dual-display: DoubleSight 15-inch

77 Dual-format DVD burner: Lite-On 8x

77 DVD burner: Memorex True8X

80 PC case: Chenbro PC6166 Gaming Bomb

80 PC case: SilverStone Nimiz

82 Optical mouse: Nyko AirFlo

82 Ball mouse: Sniper Boomslang 2100

84 Slide show software: 3D-Album

84 Slide show software: MemoriesOnTV 2.0

84 Slide show software: PhotoStory on CD & DVD

86 Lords of Everquest

86 Beyond Good and Evil

87 Counter-Strike: Condition Zero



EDITORIAL

George Jones EDITOR-IN-CHIEF
Katherine Stevenson MANAGING EDITOR
Gordon Mah Ung SENIOR EDITOR
Will Smith TECHNICAL EDITOR
Logan Decker FEATURES EDITOR
Josh Noren DISC PRODUCER
Andrew Sanchez EDITOR EMERITUS

ART

Natalie Jeday ART DIRECTOR
Boni Uzilevsky ASSOCIATE ART DIRECTOR
Mark Madeo PHOTO EDITOR
Samantha Berg ASSOCIATE PHOTOGRAPHER

CONTRIBUTING EDITORS

Tom Halfhill, Tae Kim, John Lira,
Thomas McDonald

CONTRIBUTING WRITERS

Omeed Chandra, Jason Compton, Alice Hill,
Tom Price

CONTRIBUTING ILLUSTRATOR

Dave McKay

PRODUCTION

Richard Lesovoy PRODUCTION DIRECTOR
Glenn Sadin PRODUCTION COORDINATOR

ADVERTISING

Chris Coelho PUBLISHER
Bernard Lanigan EASTERN AD DIRECTOR
646.723.5405
Dave Lynn WESTERN AD DIRECTOR
949.360.4443
Stacey Levy WESTERN AD MANAGER
925.964.1205
Anthony Danzi EASTERN AD MANAGER
646.723.5453
Nate Hunt NATIONAL ACCT MANAGER
415.656.8536
Jose Urrutia ADVERTISING COORDINATOR
415.656.8313
Kathleen Reilly MARKETING MANAGER

CIRCULATION

Tina K. Rodich CIRCULATION DIRECTOR
Mimi Hall NEWSSTAND DIRECTOR
Angela Martinez FULFILLMENT MANAGER
Janet Amistoso DIRECT MARKETING
SPECIALIST
Siara Nazir ASSISTANT BILLING AND
RENEWAL SPECIALIST

BACK ISSUE REQUESTS

1.800.865.7240

REPRINTS PRINT AND DIGITAL

Reprint Management Services
Maggie French, 717.399.1900 x178
mfrench@reprintbuyer.com

How to contact us:

All subscription inquiries 800.274.3421 or
maxcustserv@cdsfulfillment.com
Editorial staff input@maximumpc.com



FUTURE NETWORK USA

150 North Hill Dr. Brisbane, CA 94005
415.468.4684 www.futurenetworkusa.com

Jonathan Simpson-Bint PRESIDENT
Tom Valentino VICE PRESIDENT/CFO
Charles Schug VP/GENERAL COUNSEL
Holly Klingel VP/CIRCULATION
Matt Firme VP/EDITORIAL DIRECTOR (GAMES)
Simon Whitcombe PUBLISHING DIRECTOR (TECH)
Chris Coelho PUBLISHING DIRECTOR (TECH)
Jon Phillips EDITORIAL DIRECTOR (MUSIC)
Brad Tolinski DIR. OF CENTRAL SERVICES
Nancy Durlister PRODUCTION DIRECTOR
Richie Lesovoy

Future Network USA is part of Future Network PLC

FUTURE NETWORK PLC

30 Monmouth St., Bath, Avon, BA1 2BW, England
www.thefuturenetwork.plc.uk

Roger Parry NON-EXECUTIVE CHAIRMAN
Greg Ingham CHIEF EXECUTIVE
John Bowman GROUP FINANCE DIRECTOR

APRIL FEATURES

26 Do It Yourself

Pull your PC into the pits and put it up on the lift—it's time to go to work with 28 DIY projects!

52 Power Notebooks

Six of the world's fastest laptops descend on the lab and make crop circles all over our benchmarks. The winner is such a monster we had to don sunglasses just to look at it.

44 Google

Your search for how Google works has come to an end. We explain all!



In/Out

You write, we respond

WI-FI WHY SO?

In your March Wi-Fi Wonder article (page 38), you had a section on how to logically troubleshoot your Wi-Fi problems. Keeping your firmware up to date is often a good idea, but would you actually go through the whole process of upgrading the firmware before first trying any of your other suggestions? It seems illogical to suggest the more complicated, lengthy, not to mention potentially risky step as the first thing to do when you are trying to logically troubleshoot something.

—DANIEL ZIEMINSKI

EDITOR IN CHIEF GEORGE JONES

RESPONDS: On more than one occasion we've spent hours (and even days) configuring and reconfiguring a setup in order to find the answer to a Wi-Fi problem,

only to discover that, much like an updated videocard driver, a simple firmware upgrade fixed the problem in minutes. This is especially the case with older routers. With this said, your point regarding the risk involving firmware upgrades is well taken. It's extremely important to double-check that you have the proper firmware for your router before installing it, or you could permanently damage it.

WI-FI QUICK FIX: D-LINK ROUTERS

While your Wi-Fi Wonder article contained a lot of good information, you left out one important troubleshooting step that seems to come up with D-Link routers. I recently set up a friend's D-Link router, and while the wired computer worked, my laptop couldn't connect to the router. A quick check on

Google revealed that the default preamble setting for some D-Link routers is "short preamble." Switching it to "long preamble" immediately fixed the problem.

—ROBERT J. FUNCHES

WERE MY RIGHTS VIOLATED?

After reading your article on PC Rights (February, 2004), I was wondering if you would be able to respond to a problem I had. I attend a private university that provides a LAN for the students. I was using *Kazaa* and unintentionally sharing my files last semester. The connection hogged too much memory, so I closed it. An hour later the IT Dept. knocked on my door and wanted to know who I was. Then they proceeded to tell me that my roommate and I were using an unusually high amount of bandwidth, the highest on

campus. They told me that was all they knew, and then they shut off our ports so we were unable to access the Internet. They were not able to check our computers at that time because I had class. But when I returned from class they were sitting in my desk chair demanding to get on my computer. My question is, did I have the legal right to refuse access to my PC? Did they have any right to demand access at all? Were my rights violated? Of course I was in the wrong, but they had no way of knowing that. Therefore they did not have probable cause; they just had a guess that I was uploading too much content.

—RICK W.

MAXIMUM PC FEATURES EDITOR

LOGAN DECKER RESPONDS: As we found out during the development of both our PC Rights stories (January

WINDOWS TIPS WINNERS!

In our massive Windows tips story in the February issue ("Energize Windows," page 26), we launched a two month search for the finest reader-submitted Windows XP tips on the planet. We received more than 1,000 submissions, and after digging through them all, the results are finally in! One is a pure play for power on low RAM systems; the other a simple tweak that optimizes downloading in *Internet Explorer*.

Here are the winning entries, hand-picked by our lab experts:

ENABLE WINDOWS TO AUTOMATICALLY REMOVE UNNECESSARY DLL'S FROM CACHE MEMORY

Sometimes XP keeps DLLs in cache memory even when the program that required them is no longer running; this can cut down on the memory available to other applications, particularly with low memory systems. This simple Registry hack allows XP to automatically remove these DLLs from cache memory.

▶Run the Registry Editor and go to



the following key:
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Explorer.

▶Create a new DWORD value named AlwaysUnloadDll, and give it a data value of 1.
▶Exit the Registry and reboot for the new setting to take effect. Note that this setting may cause problems with some programs. Some

Windows programs—especially older and 16-bit programs—may issue error messages with this setting in effect; so if that happens, delete the new key or give it a value of 0.

—JOE KANE

EDITOR IN CHIEF GEORGE JONES RESPONDS: For this performance-inducing tip, Joe receives a brand-new Audigy 2 ZS Gamer soundcard. Thanks, Joe!

INCREASE THE MAX NUMBER OF DOWNLOADS IN IE

Frustrated by *IE* downloading restrictions and slowness? This will increase the max number of simultaneous downloads you can perform in *Internet Explorer* to 10. Start Registry Editor

▶Locate the following key in the Registry: HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Internet Settings

▶On the Edit menu, click Add Value and then add the following Registry values:

"MaxConnectionsPer1_0Server"=Dword:0000000a "MaxConnectionsPerServer"=Dword:0000000a

—TERRENCE HO

EDITOR IN CHIEF GEORGE JONES RESPONDS: For submitting the number two tip, Terrence Ho receives an ATI Radeon 9600XT 3D videocard. Thanks, Terrence, and thanks to everyone who submitted tips to the contest.

To read more of our favorite reader-submitted tips, check the web site at www.maximumpc.com.

2002 and February 2004), there's still a lot of uncertainty surrounding many issues where technology and the law collide. To make matters worse, overly broad wording of new legislation (like that of the Digital Millennium Copyright Act) tends to inadvertently snare lots of dolphin with all the tuna, creating even more legal chaos. If you feel that your right to access, use, and create technology has been violated, you can contact the Electronic Frontier Foundation at www.eff.org. As stated on its web site, the purpose of the EFF is to "...identify threats to our basic rights online and to advocate on behalf of free expression in the digital age."

COMING NEXT MONTH in the No-Bull Peace Prize winning May issue of *Maximum PC*

THE FUTURE OF 3D IS HERE

ATI and nVidia are on the verge of delivering a whole new set of 3D technologies, and we have the scoop! What's the upshot for you, gentle reader? Unbelievable frame rates in the next-generation of games!

PROJECT: BUDGET PC

Is it possible to build a \$500 PC that zooms? How fast can you make a \$1,000 rig? Our staff is furiously testing components and gear. We'll have the answers for you next month.

MAXIMUM PC CHALLENGE: LCDs

Can the latest, greatest LCDs compete with traditional CRTs in displaying the newest games? Find out next month!

PLUS

A feature on the latest motherboards, Voodoo's cool-looking silent PC, and more!

If you *don't* feel like your rights have been violated and don't need their help, then consider making a donation to the EFF instead, as the non-profit group is entirely donor-supported and works tirelessly to promote digital freedom and neutralize bad legislation. But we have some personal advice for you, Rick. Maybe you ought to let this one go. Universities take on a lot of risk to provide Internet access for students, so it's not surprising to us that they might be, uh, a little overly cautious at times. Intentionally or not, you soaked up tons of bandwidth and got busted for it, possibly jeopardizing everyone's access.

Besides, remember how you said they had no way of knowing what you were up to? Well, now they know.

DREAMING OF DDR2

I was thinking of getting 2 gigs of DDR RAM for my PC, and I recently read in your magazine that DDR2 is coming out this summer. I have an Asus P4C800-E Deluxe mobo—will it be compatible with DDR2?

—JOE CENSOPLANO

SENIOR EDITOR GORDON MAH

UNG RESPONDS: No go, Joe. When DDR2 is released, it will run at lower voltages and require a different connector. This means that the upcoming RAM, which will scale to speeds that today's DDR can only dream of, will require you to buy a new motherboard. However, this doesn't mean you should cancel your plans to buy more RAM, which is affordable these days. And whether DDR2 will become *lingua franca* this year or be about as easy to find as a hen's teeth has yet to be seen.

WHO'S RIGHT ABOUT OVERCLOCKING AND BOOTVIS?

Recently, two programs you suggested didn't pan out for me. First, I wanted to overclock my videocard, for which you suggest *Powerstrip*. I downloaded it, but the web page's FAQ not only strongly discourages overclocking, but says it will "not really" improve performance. Also, having a new PC with a two-minute boot time, I went to get *BootVis* (at your suggestion) from Microsoft. The web page says, "Bootvis.exe is not a tool that will improve boot/resume

performance." I was a little disappointed; you made these programs seem like the answer to my problems. Who do I trust?

—JOE AIRAUDI

TECHNICAL EDITOR WILL SMITH

RESPONDS: We've tested both apps extensively. Despite what the folks at Entech say, using a utility—like *Powerstrip*—to overclock your videocard can net you significant performance gains, especially if you're blessed with a videocard that overlocks well. We've clocked some midrange boards well beyond 500MHz for a frame rate boost of up to 10 percent in some benchmarks.

Running *Bootvis* on a fresh install of Windows XP can shave whole minutes off your boot time. After pimping it as a hardcore hardware hacker feature prior to the launch of Windows XP, Microsoft is mysteriously disassociating itself from the utility. Our guess is it was causing some costly calls to tech support hotlines intended for important OEM customers. You can still find *Bootvis* these days by searching for it on Google. (Be sure to use the SP1 version if you have that installed.)

WHY DO FAST PCs BOOT SLOWLY?

Why is it that unimaginably fast computers boot so slowly? For example: On page 68 of your January issue, you give a positive review to the Hypersonic SonicBoom. Granted, it's fast, with a P4 3.2EE, 1G DDR, and Western Digital 10,000rpm hard drive. But it has a very slow boot speed. I cannot fathom why such a god-like and cool looking computer takes 65 seconds to boot! I can get my P4 2.6 (HT) and 7200rpm ATA HDD to boot in about 23 seconds, including login, with no services disabled. Making matters worse, just as I got over the shock of that 65-second travesty, I was floored to see that on the next page, HP's fast Pavilion ZD7000 notebook has an 82 second boot!

—CURTIS SCHEIRER

SENIOR EDITOR GORDON MAH UNG RESPONDS: Blame it on the RAID. For many high-end systems, including Hypersonic's SonicBoom, slow boot times can usually be blamed on the RAID array. Anyone who runs RAID, SCSI, or a PCI add-in card for storage knows it takes these cards 15 to 20 seconds to look for the hard drives. While we list the boot times for readers, we acknowledge (and hopefully most advanced readers know) that boot times are flexible. They change as applications and hardware are added or removed. In the case of HP's notebook, Windows XP was likely waiting for some poor-acting driver to settle down.

YOUR WISH HAS BEEN GRANTED

I recently read an article about how LCD displays are now up to par with (and even better than) CRTs. I'm curious if LCDs are now a viable option for gamers and ask if you can do an article on whether or not they are.

—ERIC KAERCHER

EDITOR IN CHIEF GEORGE JONES

RESPONDS: Your wish is our command, Eric. We've received a number of e-mails requesting that we resolve this issue; as LCD technology becomes more and more sophisticated, its potential for gaming becomes more promising. In next month's issue, we'll be comparing several top LCD displays to the trusty CRT. Stay tuned! ■

CUT, COPY, PASTE

► In the March RAM: All Questions Answered feature we goofed in the chart titled "How We Test RAM" (page 55). We ran the wrong clock speeds for DDR SDRAM. The correct clock speeds are:

PC2100 = 133MHz
PC2700 = 166MHz
PC3200 = 200MHz
PC3700 = 233 MHz

LETTERS POLICY: *MAXIMUM PC* invites your thoughts and comments. Send them to input@maximumpc.com. Please include your full name, town, and telephone number, and limit your letter to 300 words. Letters may be edited for space and clarity. Due to the vast amount of e-mail we receive, we cannot personally respond to each letter.



Quick Start

The beginning of the magazine, where articles are small

Finally—the Flexible Display!

This year, organic films and electronic ink will completely change the way we look at computing

In *Minority Report*, a newspaper's front page layout suddenly updates to display fugitive John Anderton's face, giving moviegoers yet another glimpse of pie-in-the-sky Hollywood future-tech. Like flying cars, personal jet-packs, and the Orgasmatron, the notion of a digital display that is as legible and flexible as paper is a concept everyone assumes will exist someday—just not anytime soon. But the images on this page prove that the future

may be closer than we think.

In order to make flexible displays feasible as well as practical, Philips has had to overcome a few major technology hurdles. A flexible screen requires a flexible substrate—a supporting base layer—on which to imprint the transistors that will activate the individual display pixels. Previously, only inflexible glass substrates could withstand the manufacturing temperatures required by today's active matrix liquid crystal displays. Enter Polymer Vision, a Dutch company that has developed a solution. By creating a substrate of several thin, flexible alternating layers of materials, electrical interconnections can be passed on to individual pixels without the need for high processing temperatures.

Problem is, current thin film transistor display technology is incompatible with flexible sub-

strates due to "cell gap control." This is the need for a uniform distribution of pixels. If you were somehow able to bend a traditional glass display, the pixel pattern would warp and distort the image. Not good. To circumvent this problem, E Ink Corporation developed an electronic ink that's composed of tiny spheres suspended in a clear fluid locked into a microscopic grid. It works similarly to the way your down comforter keeps feathers from bunching up in one corner—by stitching the feathers into square cells to keep them uniformly distributed.

The spheres are like magnetized ping-pong balls painted white on one side, and black on the other. A positive charge makes one ping-pong ball display its black side; another charge flips the ping-pong ball to its white side. What's more, E Ink extended this simple metaphor to create spheres that contain spheres within themselves, permitting even higher resolutions. Check out the results for yourself—pictured here are functioning dynamic, flexible displays.

Imagine: cigar-size maps that unroll into large screens that use GPS to show us our current position and how to get to our destination; pen-size PDA's with scrolling, touch-sensitive displays; and stitch-on screens that retain the last image displayed with little, if any, power required.

Yes, we're thinking the same thing you are: Fantastic, Philips, now we're waiting for the Orgasmatron!



To see the Philips flexible display in action, go to www.philips.com, type "e ink" in the search field, and click on the "Display Technology" link.



Roll your own: Philips expects to be shipping flexible displays like this one by 2005.

'Solutions' Are for Sissies



Describing a piece of hardware as a "solution" is repugnant. Sure, to a tired-old corporate bureaucrat—his brow stinking of comb-over gel; his pudgy body shoe-horned into a Reagan-era blazer—a videocard might indeed be a "graphics solution." But as far as I'm concerned, videocards and other lustworthy computing parts aren't "solutions." They're objects d'art. "Solutions" are for people who don't *understand* computers—people who have actual computer problems. Me? I don't have computer problems. I have "computer situations" that are just seconds away from being resolved.

Or so I thought. Last month I realized, much to my shame and embarrassment, that I was in need of a bona fide computer hardware solution. Here's the deal: I'm incapable of comfortably and accurately entering text into a PDA. I don't like thumb-typing on those little keyboards, and my text entry style (imagine a vague amalgam of vertical and horizontal lines) perplexes the AI of modern character-recognition systems. These are serious problems indeed, especially because half of my work day now involves attendance at meetings where note-taking is considered a professional requirement.

And so I was compelled to find a portable "personal computing solution" that can be easily toted to meetings and used for general doodling.

Enter the HP Tablet PC TC1100. *Maximum PC* hasn't yet reviewed the TC1100, but sister magazine *Mobile PC* found it to be the best of seven Tablet PCs reviewed in its April 2004 issue. I've been using the device for exactly one week as of this writing, and I can testify that, thus far, it's been the perfect solution for my particular computing problem. Using the TC1100's bundled "pressure pen" and built-in "digital ink" feature (which is intrinsic to all Tablet PCs), I've been jotting down cursive, long-hand notes directly onto virtual paper. Gone is the heartbreak of flawed character-recognition. I simply open up a *Windows Journal* document, and then write on the Tablet's screen as if the TC1100 were a normal paper notepad.

Yes, I'm sold on the basic Tablet PC concept, but how will the TC1100 stack up over time? After all, if any product were to reveal itself as a useless curiosity after a brief honeymoon period, it would be the oh-so-novel Tablet PC. Is it a true personal computer—a direct replacement for notebooks and PDAs—or a one-trick Shetland? Will I grow to hate the lack of a built-in optical drive? And what about the dearth of applications that leverage the awesome power of the pen?

Check back next month for a little "solution resolution." I'll have a full road-testing report, and pass a final referendum on Microsoft's and HP's interpretation of pen-based computing.

Jon Phillips was formerly editor-in-chief of *Maximum PC*, and now serves as the magazine's editorial director.

Portable Media Centers Hit the Road

Microsoft's newest OS kicks off the Year of Video-To-Go

Last month we gave you a gander at Creative Labs' Zen Portable Media Center, a handheld media player that lets you listen to music, view and pictures, watch movies on the same foxy device. It's based on Microsoft's fledgling OS, once named Media2Go and now rechristened Windows Mobile for Portable Media Centers (by far, more of a mouthful).

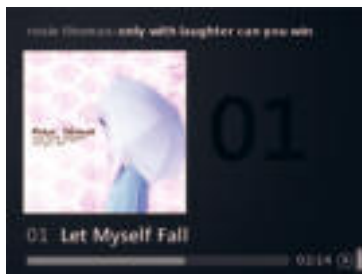
Windows Mobile PMC is a spinoff of Windows CE in the same way Windows XP Media Center Edition was spun off from Windows XP. Microsoft hopes its newest OS will soon enjoy the same ubiquity that the Media Center Edition appears to be achieving. By providing a standard, easy-to-use interface for the next generation of media players, the company believes it will encourage manufacturers to adopt the platform and build hardware that supports it.

From the look of things, Microsoft appears to be right in its assessment

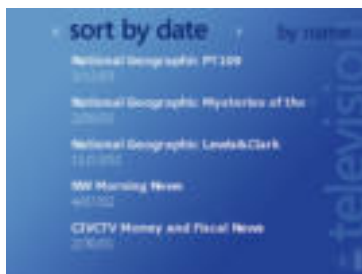
that consumers are ripe and ready for portable media. At the January Consumer Electronics Show (CES) in Las Vegas, eyeballers swarmed around a gaggle of Portable Media Center devices from a slew of different companies. However, only Samsung joined Creative Labs in announcing a product expected to ship this year.

DirectX 8 technologies are among the features supported by Windows Mobile for Portable Media Centers (that name!), as are USB 2.0 playback of digitally recorded TV, instant-on, preemptive multitasking, and, of course, a standard user interface based on the familiar WinCE model.

We also know that Windows Mobile for Portable Media Centers will support Windows Media Digital Rights Management (DRM), but to what extent is unclear. This will determine whether users will be able to swap content (unlikely), or be able to play media encoded in non-Windows formats such as DivX and Xvid (also unlikely). If non-Windows devices like the Archos AV320 (www.archos.com), RCA's Lyra (www.rca.com), or Sony's upcoming PSP (www.sony.com) remain less restrictive, Microsoft's Portable Media Center OS could take a competitive hit in the coming year.



Here's your first peek at the interface of Windows Mobile for Portable Media Centers (showing music playback with album art).



Another look at the Windows Mobile for Portable Media Center interface demonstrates a particularly tasty function—downloading broadcast video recorded on your PC to your portable media player!

Portable Media Through Time

We take a historic look back at humanity's quest for fun on the run

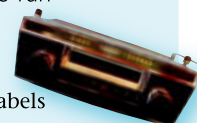
Stone Tablet

- ☞ Durable, no batteries
- ☞ Low information density



8-Track Tape

- ☞ Easy-to-read large-print labels
- ☞ Unshakeable association with feathered hair



Music Box

- ☞ Hypnotic, low-maintenance
- ☞ "Nutcracker" theme not written yet



Walkman

- ☞ Plays user-recorded tapes
- ☞ Plays Journey tapes



Humpty-Dumpty Was Pushed

...and other favorite Easter Egg shockers

It's April, which means April Fools, which means it's time for us to point out the year's most curious and rewarding gaming Easter Eggs

The game: *Grand Theft Auto: Vice City*

What to do: You'll need to go to the "Eight Ten VCN" building, which is one of the first buildings on your right after crossing the North Bridge en route to Prawn Island. Use the door to get to the roof where the helipad is. Go to the northwest corner and take a flying leap through the closest set of windows in the adjacent building. Holy cow!

Rockstar raises the bar on postmodern gaming cool with an Easter Egg that knows it's an Easter Egg.



The game: *Deus Ex: Invisible War*

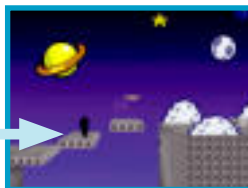
What to do: When you return to Liberty Island at the game's conclusion, head over to the UNATCO map. Grab the flag nearby and take it down into the bathroom next to Manderley's office. Drop the flag, and then flush the toilet (yes).

It's not all religious fanaticism and back-stabbing in *Deus Ex: Invisible War*. At the end of the game, you're invited to the wrap party!

The game: *Star Trek Elite Force II*

What to do: On the Attrexian Station Level 1a, go to the weapons locker and bash in the wall at the back. Jump into the pipe and you'll, uh, warp to a hidden level.

Take a break from *Elite Force II* with a little retro-gaming excitement.



FUN-SIZE NEWS



Firefox: Less is more.

INTEL ADDS 64-BIT EXTENSIONS

At the Intel Developers Forum in mid-February, the company stated that the public can expect 64-bit capability in its upcoming Xeon CPU, code-named Nocona. The proc will also feature SSE3, a higher frontside bus, 1MB of L2 cache, and use Intel's new 90nm process. While the extensions will be compatible with AMD's 64-bit extensions, unlike AMD, Intel has no current plans to offer it to desktop users.

MO' BETTA MOZILLA

Maximum PC editors love the lean 'n' mean version of the *Mozilla* web browser formerly known as *Firebird*. The new 0.8 version of the browser, dubbed *Firefox*, adds an installer, better web page rendering, a download manager, and a host of bug fixes.

Repeated head-butting with other software product names makes this the third name for the brave new browser (after *Phoenix* and *Firebird*) in as many new versions. With this in mind, we propose a candidate for browser name number four: *FireSeaCucumber*. Surely, that's not spoken for!

COMMUNICATIONS AT THE SPEED OF LIGHT

You think your 1.5Mb connection is fast? How would you like a 1.9Gb connection instead? That's gigabits, folks, and Intel recently demonstrated the concept using a relatively inexpensive silicon-based optical modulator. The modulator emerged from an attempt to use inexpensive standard semiconductor components to build optical networks, and Intel's success with this 2 billion-bits-per-second switch may result in the price of fiber optic networks plummeting. It could also eventually lead to PCs that span entire cities over high-speed communication lines.

▶▶ FAST FORWARD BY TOM R. HALFHILL

Why Prescott Sucks



It takes years to design a high-end microprocessor, and although simulation tools can estimate performance, engineers don't really know what they've got, until the first chip comes back from the fab. When the first samples of the Prescott Pentium 4 came out of the oven, Intel's engineers probably lost no time calling headquarters: "Santa Clara, we've got a problem."

It's not only that the fastest Prescott consumes more power while running at the same clock speed as the fastest Northwood Pentium 4 (103W vs. 89W at 3.4GHz). Prescott also leaks significantly more power, even when it's not working hard, and benchmarks indicate it delivers only a little more performance than Northwood with most software. Intel says clock speeds will creep up to 4GHz by the end of the year, just an 18 percent improvement.

What happened? One problem is that, for now at least, Intel isn't getting all the usual benefits of moving production to a smaller fabrication technology. Prescott is fabricated in a new 90-nanometer process, while Northwood is made in a 2-year-old 0.13-micron (130-nanometer) process. Historically, a process shrink allows a chip to run at a higher clock frequency and a lower voltage, and the lower voltage minimizes the greater power consumption of the higher frequency. But upon introduction, Prescott isn't faster than Northwood and operates at the same voltage. Because Prescott has many more transistors than Northwood (125 million vs. 55 million), it burns more power.

Another reason why Prescott runs hotter is that its transistors leak more current in their "off" state. Although current leakage has been getting steadily worse at smaller process geometries, it hasn't been a big problem until now.

Prescott's larger L2 cache (1MB vs. 512K) accounts for about 25 million extra transistors. Intel hasn't fully accounted for the remaining additional transistors. The latent 64-bit extensions, SSE3, and deeper pipeline (31 stages vs. 20 stages) explain some, but not all, of the transistor bloat. The pipeline also suggests why Prescott isn't killing Northwood (or Athlon 64) in benchmark tests: Deeper pipelines are better for data-intensive applications like games and multimedia than for general productivity software. Prescott's super-pipeline, the longest of any general-purpose microprocessor, tells me that Intel is focusing on games and multimedia almost to the exclusion of other applications. (That's not necessarily a bad thing, because even a 1GHz machine is fast enough for productivity software.)

Intel knows Prescott has problems, so count on future versions to offer a better power/performance ratio.

Tom Halfhill was formerly a senior editor for *Byte* magazine and now an analyst for Microprocessor Report.

Sex, Graft, and The Sims Online



Sometimes I hate it when I'm right.

When I first covered *The Sims Online*, both in this space and in a full review, I found it decidedly unstructured and boring. This lack of gameplay has resulted in a family-unfriendly experience: a T-rated game where 12-year-old-girls chat with 50-year-old leather fetishists. Even in its early days, *The Sims Online* was spiraling out of control into an anarchic meat market of sex and abuse. In the proper place—like adult video or M- or A-rated games—such subject matters are not necessarily a problem. In *The Sims*, with its large audience of teens and preteens, it's a big problem. And it's only gotten worse.

Over the past few months, the mainstream media has shocked readers with sordid tales about the *The Sims Online*'s seamy underbelly, many of them driven by *The Alphaville Herald* (www.alphavilleherald.com) and the subsequent banning of its editor, Professor Peter Ludlow. Everyone from *CNN* to *The Daily Show* to the *Times of London* picked up Ludlow's stories of rampant cyber-prostitution, racketeering, abuse, racism, and online sex. Electronic Arts, the games publisher, promptly bounced Ludlow from its servers and began policing *TSO*, but it's clear the company has lost all control of its virtual world.

Adding to EA's headache is the fact that the game is a colossal and expensive failure. The stated goal was 1 million users; the game wound up with 80,000, a fraction of whom play on a daily basis. And here's the twist: It's not in EA's best interest to clean up the virtual environment because without sex, the game would be dead in the water. The thriving BDSM (bondage, dominance, and sadomasochism) community alone has at least 500 members. If they take away brothels where people can exchange simoleans for a little hot chat, *TSO*'s economy might collapse.

EA developed the "Red Link" as a means of curbing undesirable behavior by tagging unfriendly users in *The Sims Online*, but even that is backfiring. Extortion rackets have started popping up where "griefers" (the *TSO* equivalent of Player Killers, or PKers) have formed mafias, conned newbies out of their cash, and threatened to red link users who don't pay up.

Now for the social context: If massively multiplayer games allow people to be whomever or whatever they want without limits, then does *TSO* prove how dysfunctional we all are? Of course not. If it did, then these issues would plague *EverQuest* as well. The problem lies in the unstructured design of *TSO* itself, which practically paralyzes gamers with a lack of gameplay and leaves mischief and sex as the only interesting alternatives. *TSO* isn't a game: It's a lavish graphical chat room. It was an ill-conceived and irresponsible undertaking, and it's time for EA to pull the plug.



After having been freed, Willy wound up on the surface of an Allen-Bradley/Rockwell node adapter integrated circuit.

Inside the Silicon Zoo

Be careful poking around in your PC—it's a jungle in there

Michael Davidson, senior research engineer at Florida State University's National High Magnetic Field Laboratory (NHMFL), made an astonishing discovery one day while observing the surface of a dead CPU from a Silicon Graphics server. "I discovered Waldo," says Davidson, "and I kept searching, and found there were about 15 doodles on that chip."

After Davidson examined dozens of wafers and uncovered a menagerie of strange beasts etched into silicon, he launched the Silicon Zoo web site (<http://micro.magnet.fsu.edu/creatures>) with his findings. Eventually, some chip engineers started sending the goods directly to him. To find these images—most of which are invisible to the naked eye, he magnifies the chips to 1000x and meticulously scans the surface.

Sadly, discoveries have been infrequent in recent years, owing to both stiffer attitudes at chip design firms and the vagaries of ever smaller chip fabrication processes. Nonetheless, a decade after his first explorations, Davidson's mission hasn't changed: "I'm trying to advance the photography of integrated circuits as an art form."



According to Davidson, Hewlett-Packard is the career leader in spiffy chip artwork. This cheetah prowls an HP memory controller.



Our personal favorite hides on an HP PA-RISC 7000 series microprocessor—the Stay Puft Marshmallow Man rides again.



Davidson's favorite stands out among the Silicon Zoo's other denizens not only because it's the mighty god of thunder, but because at 1.1 square millimeters, it can (barely) be seen with the naked eye.

Tom McDonald has been covering games for countless magazines and newspapers for years. He lives in the New Jersey Pine Barrens.

TechnoFile

Quick takes on technology trends

THIS MONTH: Digital Cameras Evolve

What's a camera gotta do to get some attention around here? A whole lot, apparently. From design to increased functionality, today's digicams are trying hard to distinguish themselves in an ever-expanding market.

Pentax Optio 33WR

Pentax' 3.2-megapixel digicam is the Sporty Spice of the bunch. Water resistant, equipped with rubber bumpers, and possessed of a "fun" unconventional shape, it's got moxie. But can it go the distance in the great outdoors?

It's not quite pocket-sized, and you have to purchase a wrist strap separately, so right out of the box, you need to figure out a way to transport it. On the other hand, the judicious placement of buttons and the absence of any protruding parts make it firmly graspable from any side or angle without risk of mishap.

As for its water resistance? We used the Optio in the rain without incident, but more telling is Pentax' own instruction manual: To clean the Optio you're advised to "rinse off the camera under slowly running tap water...for two to three minutes." Surely it can also withstand the occasional snow flurry or spray of white water. **\$350, www.pentax.com**



Kyocera Finecam SL300R

Kyocera launches a multi-pronged attack with its offering of unusual goodies, a la the Finecam SL300R 3.2-megapixel digicam (which received a 7 verdict in the March issue). In its rectangular resting state the SL300R is sharp-looking, unobtrusive, and easy to transport at just 15mm thick. But there's a twist—literally. The camera, which is actually made up of two distinct parts, assumes a completely different shape for picture taking. The real hook, though is the Finecam's atypical speedy response time. With just a .07 second lag between shots, it's the only digicam here that we'd trust with a spontaneous action shot. Add to that a continuous-capture mode that lets you take 3.5 frames per second and you've got a digicam that gets noticed. **\$400, www.kyoceraimaging.com**

Digital Dream JB 1

Touted as "the world's first official 007 digital camera," the sub-megapixel JB 1 is for people who value stealth above all else. Its brushed-metal case looks strikingly like a Zippo, but you'd better hope no one asks for a light; flip open the lid and you expose the JB 1's prying digital eye. Two-button operation makes for minimal fumbling, theoretically, but we sometimes had trouble just getting the bloody power on. The JB 1 offers all the features you'd want for reconnaissance work—audio, video, and even a "James Bond" mode that lets you set the camera to automatically take pictures at intervals of up to 90 minutes. But we wouldn't pin our hopes on JB 1-gathered evidence—the tiny plastic body feels more like a toy than an effective sleuthing tool. **\$100, www.jbcamera.com**



Sony Mavica

Brawny best describes this 5.0-megapixel beast. It's got the solid build, Carl Zeiss Vario Sonnar lens, generous 2.75-inch diagonal LCD, and room to house an 8cm 156MB CD-R/RW disc, where all your pictures, audio, and video end up. Of course, you'll need to wait 10 or so seconds between captures while info gets s-l-o-w-l-y written to the disc. Still, this unique approach to storage has its merits. The media is cheap enough that you can carry dozens of discs as backups or to give away after photo sessions.

It's clear the Mavica is targeted at avid photographers. The camera weighs more than a pound and has buttons and knobs for all the functions of a traditional SLR camera—shutter speed, f-stop, aperture value, and an advanced accessory shoe. That spells commitment. In our hands, the body felt comfortable and well-built, albeit hefty. Thankfully, a rugged neck strap is part of the package.

\$600, www.sonymstyle.com



Concord EyeQ Go Wireless

Concord is hoping you've really, really had it with cables—locating them, plugging them in, even their very existence. After all, the ability to transmit pictures wirelessly is the one thing the company's GoWireless has going for it. Granted, it's the only camera we know of to boast this feature, but maybe there's a reason for that. We were prepared for the 2-megapixel resolution—wireless transfers favor less detail, of course. Still, try as we might, we could not successfully transfer pictures to our computer wirelessly! With the included Bluetooth receiver (see picture) connected to our PC's USB port, we followed the manual's instructions repeatedly and the equipment refused to behave. The one image that did

manage to complete the challenging journey to our PC took approximately 45 seconds from start to finish. Minus its wireless capabilities (or lack thereof), the camera is characterized by its cheap build, cryptic interface, and measly 7MB of built-in memory (that's room for eight still images at the highest resolution and

quality!). **\$180, www.concord-camera.com**



Kodak EasyShare DX6490

Looking much like Mini Me to Sony's Mavica, the 4.0-megapixel DX6490 is for folks who take their recreational photography seriously, but not *that* seriously. While the DX6490 lacks the Mavica's girth, it sports a similarly authoritative aesthetic and a bounty of options. And the Kodak badge commands a certain nostalgic reverence. But the DX6490's big selling point is its 10x optical zoom (the Mavica tops out at 3x). Frankly, we're surprised this feature made it past the Department of Homeland Security. To put it into practical terms, we were able to make a person who was standing more than 50 yards away the central subject of a perfectly respectable snap shot.

Another nicety in the DX6490 package is a camera dock. Not only does it provide a convenient recharging station for the digicam's Li-Ion battery, but it also has a USB port on the front. With the dock attached to your PC, images are automatically downloaded whenever the camera is snapped into its resting place. **\$500, www.kodak.com**



Head2Head

A showdown among natural PC competitors

THIS MONTH: Color Printers!

It's simple. If you want to print high-quality photographs, you want an inkjet printer. If you need a fast workhorse printer that produces sharp, beautiful text, you need a laser printer. The problem is, we all want both, but few of us are willing to purchase (and make room for) both kinds of printers to meet both kinds of needs. So most folks opt for inexpensive inkjets that offer photorealistic printing on special paper, and can still print out a few sheets of decent-looking text when there's a hostage crisis at the local Kinko's.

Konica Minolta's Magicolor 2300W may help tilt the balance in favor of laser printers, however. With extremely fast full-color printing, crisp laser-printed text, and a shockingly low street price of \$700 (not including the current \$100 rebate), there's good reason to re-evaluate what each type of printer has to offer.

So how does this upstart color laser printer stack up against a tried-and-true inkjet? Let's find out.

—LOGAN DECKER

EPSON STYLUS COLOR 2200

Photo quality: Hmm... vibrant, photorealistic prints on glossy paper via inkjet vs. grainy prints on standard laser-printer paper? It's no contest. The Stylus Color 2200 produces the best looking photo prints—including borderless prints—we've ever seen on a sub-\$1,000 printer. Only gray-scale photos disappointed us, showing some banding in gradients, but this can easily be remedied with an optional matte-black ink cartridge intended for black and white photos. **Winner: Stylus Color 2200**



Even our persnickety staff photographer Mark Madeo gasped at some of our test images; amazingly, shadowy areas retain their detail.

Murky and grey, the text quality from the Stylus Color 2200 on plain paper (shown here at 5-point type) is unacceptable for anything but laundry lists and ransom notes.

You are the D
ourine You can
ancing Queen

Text quality: While still better than dot matrix printers or rubber stamps, text output from the Stylus Color 2200 on plain paper is abysmal. The culprit is dot gain—the tendency for ink to spread out after it hits the paper. As a result, even with “black-ink only” selected, our test text looked gray and dull. Epson doesn't recommend the 2200 as a dedicated text printer. We don't either. **Winner: Magicolor 2300W**

Cost per print: Full color photos on glossy photo paper will run you about 93 cents a sheet. And that's a fairly low figure considering that this was calculated at 5 percent coverage per color—most photographs will average higher color, and thus higher cost. **Winner: Magicolor 2300W**



Features: The Stylus Color includes a paper roll adapter and integrated cutter, so you can queue up images and batch print them during lunch or fire drills. You can feed paper sizes from envelopes all the way up to 13x19-inch sheets. Unfortunately, the printer lacks a network interface. **Winner: Stylus Color 2200**

Speed: No surprises here, except that the Stylus Color 2200 is pokey even by inkjet standards. Printing a full page of text at 360dpi took 29 seconds. Increasing the resolution to 720dpi ballooned the time to a lengthy 2:36 (min:sec). A five-page *Acrobat* document with illustrations took 4:19 (720dpi). But the kicker is this: A full-bleed 8.5x11-inch color photograph at the best photo quality setting (2880x1440dpi) took a whopping 24:20. **Winner: Magicolor 2300W**

MAXIMUM PC VERDICT

9

+ JETSONS

You'll get dazzling, I-can't-believe-it's-not-butter color prints from the Stylus Color 2200.

- JETSAM

You'll pay a premium for the privilege, and you'll wait a long time for it, too.

\$700, www.epson.com

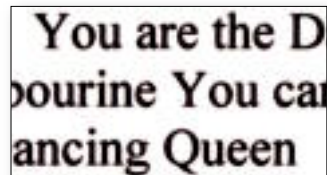
KONICA MINOLTA MAGICOLOR 2300W

Photo quality: Although you'd never mistake the output for a photo, even on heavy card stock, the color results from the Magicolor 2300W surpassed our expectations by far. The quality is just shy of a fine color newspaper. Blown-out highlights and significant stippling and banding in gradients prevent the Magicolor from being ideal for use with detailed photographs, but it's exactly the kind of printer you want for web pages, quick proofs, mock-ups and, of course, presentations.

Winner: Stylus Color 2200



Although it's fine for most line art and presentation-style graphics, the Magicolor 2300W suffers from blown-out details in prints from color photographs.



Text quality: Lovely in a way that inkjets still can't approach. Characters keep their optical quality down to 5-point text, after which the crispness drops sharply. Impressively, text remains legible, if not comfortable to read, down to 3-point text.

Winner: Magicolor 2300W

The Magicolor gave us sharp text all the way down to 5-point type (shown here). After that, characters become a chore to read. Still, this is much better quality than the Stylus inkjet provided.

Cost per print: Full color pages will cost you about six cents per page assuming 5 percent coverage (though, again, photo prints will cost more than this because of the amount of toner necessary to produce a picture). **Winner: Magicolor 2300W**



Features: The Magicolor 2300W is a fantastic value, finally bringing fast color laser printing to consumers and home offices. Nonetheless, it resides at the low end of the cost spectrum, and thus it not only offers few extras, but also cuts corners. For example, the printer lacks an LCD screen, and the 200-page paper intake slot is awkwardly placed in the rear of the machine. Furthermore, the lack of a network interface on a laser printer like this is tragic. **Winner: Stylus Color 2200**

MAXIMUM PC VERDICT 8

+ LASER FRAG

Fair quality color output—especially considering it's the cheapest color laser we've ever seen.

- LAZER TAG

The output is still far from photo-quality, and lacks full-bleed printing ability.

\$700 (not including \$100 rebate available at press time), <http://printer.konicaminolta.net>

Speed: It's faster to fuse toner to paper than to spray ink on a page. How much faster? We printed a full page of text (600dpi) in 15 seconds. A 20-page text document took 1:26 (600dpi). Our five-page Acrobat document with illustrations took 2:47 (in color, at 1200x600dpi).

Winner: Magicolor 2300W

AND THE WINNER IS...

The Magicolor wins more categories here, but the Epson wins in the areas that are most important. Although it's no good for everyday text printing, the color print quality of the Epson Stylus Color 2200 hoists it above every other color printer available at this price. So for hardcore digital photographers, the Stylus 2200 is a no-brainer. In fact, if you're even thinking of printing photos along with your text, this is your printer.

The Magicolor 2300W, on the other hand, simply brings the price of color laser printing down to something regular

consumers can afford. But this in itself is a very impressive achievement. If printing color photos isn't your thing, you'll be much happier with the Magicolor 2300W's high-quality text output and blazing speed.

Although there still isn't a single technology available to consumers today that can serve color photos and text with equal aplomb, color laser printing appears to be moving steadily toward this goal much faster than inkjet technology. Join us in a year or two to find out which one gets there first.■

WatchDog



Say hello to **Puppy**,
WatchDog of the Month.

Maximum PC takes a bite out of bad gear

THIS MONTH: The WatchDog goes after...

> **Internet Fraud** > **Alyon** > **CPU Markers** > **Kyocera** > **Apple**

Gone Fishing

Information thieves are trying yet another tack to steal your online financial information: pop-ups. Until now, what's been popular are "fisher" or "fishing" frauds, whereby unwitting consumers receive spam e-mail inviting them to visit fake web sites made to look like eBay, Paypal, or a bank. But that method has pitfalls because it's possible for people to see the site they're actually at by looking at the address bar. Especially now that *Internet Explorer* has been patched to prevent address-bar spoofing. So fraudsters have turned to pop-ups, which can be made to appear over legitimate web sites as a way of fooling you. The Dog recently received a spam inviting him to visit Citibank.com. Click the link, and you'll indeed land on Citibank's perfectly legitimate web site. The fraud occurs in the form of a pop-up that appears to be related to the site, and that asks you for "e-mail verification" including debit card number and your ATM PIN. Scary, but prevention is simple. Never click a link to visit a financial institution. Instead, open a new browser window and type in the URL yourself. If you're ultra paranoid, you may want to close all of your other browser windows first.

As a side note, ZoneLab's *ZoneAlarm* can now verify if you are indeed at eBay by comparing the IP address of eBay with what's in your browser. It's a good start. Eventually, we'd like to see *ZoneAlarm* and other apps ensure that we're actually at every site we think we're visiting.

Porn Pirates

DEAR DOG: About a year ago, I got a bill that claimed to be seriously past due, so I looked

THE FTC SAYS IT RECEIVED 1,200 ONLINE COMPLAINTS ABOUT ALYON FROM CONSUMERS.

into it. The sender, Alyon Technologies (P.O. Box 923299, Norcross, GA 30010-3299, 800.269.6356), is a billing company for online porn sites, some of which may use redialers to redirect your modem through long distance phone lines in Europe. I sent copies



The web page is real, but the pop-up asking for your credit card number is a scam.

of my phone bills showing that the number I was billed for did not match any that I had called. I've had the number since 2000. I never received a response. June rolls around and I get a collection notice from International Recovery Service in Palm Desert, Calif., so I send them the same information I sent to Alyon (copies of phone bills and the invoice to show they had the wrong number), and they responded with a letter saying they were not going to try to collect on an obviously bad billing. Now it's a year later, and I get another collection notice from Merchants Credit Guide Co. of Chicago, also regarding Alyon Technologies.

How can I shut these pirates down once and for all, and can I start billing Alyon for all the time and money I'm spending responding to the bad billing?

— ERIK HILSINGER

THE DOG RESPONDS: While you'd think Alyon was some fly-by-night operation with a greasy-haired,

pinky-ringed guy answering the phone, the company is legit. As you said, Alyon offers services for porn sites that want to bill customers by letting them download dialers. The dialers call overseas phone numbers and the cost of accessing the content is added to the consumers' phone bill for \$4.99 a minute. Sounds good. Now enter the Federal Trade Commission and a convoluted trip through the court system that had a federal judge siding with the dialers.

Last July the FTC filed a complaint against Alyon alleging the company engaged in unfair and deceptive trade practices. The FTC complaint says that because of errors in Alyon's database, the company billed many consumers who never downloaded the dialers. The FTC says it received 1,200 online complaints about Alyon from consumers. The FTC has used similar tactics to slam other dialers to the ground, but in Alyon's case, the FTC's request for an injunction was denied. Federal Judge Richard W. Story ruled that Alyon could continue to operate as long as it followed standards set by an earlier settlement with the Pennsylvania Attorney General's office. That settlement requires Alyon to tell consumers how to remove the dialers; stop distributing the

dialer via pop-ups; make restitution to consumers who feel they've been improperly billed or whose bills were incurred by minors; include an auto disconnect for people who do not have the correct login for an account; and finally, add more protective layers to prevent incorrect billing. Alyon also now maintains a blocking list that lets consumers prevent the service from even working with their phone number (provided they've received prior billing from Alyon). Alyon says it has implemented all the changes and continues to operate with the permission of the courts. Whoa. FTC: 0, porn dialers: 1.

The Dog spoke with an Alyon representative who said errors do occur on occasion and pledged to have Alyon look into Erik's problem. In fact, it's clear from Alyon's web site, the company does take some precautions.

Before calls are connected, for example, consumers must click twice to agree to the service and read the full disclosure on service costs. Also, by requesting the last four numbers of a consumer's Social Security number, "Alyon will connect the call if the entered information matches a person over the age of 18 who resides at the address from which the call originated."

The Alyon web site also says: "Alyon provides a computer telephonic gateway using modem technology. We can only connect calls that are placed by computer. Also, Alyon's systems do not issue bills unless Alyon receives a call from the address to which the bill is issued. It is impossible for Alyon to issue a bill if no corresponding call was placed by a computer."

Sadly, when the Dog sought clarification from the FTC on the status of its injunction against Alyon,

the government agency punted. After two phones calls and an unfulfilled promise that an expert would call back to talk about Alyon, the Dog gave up.

If you believe you've been wrongly billed by a company using Alyon's services, you should first contact Alyon to complain. If that doesn't get you anywhere, consider filing a complaint with your state's Attorney General's consumer complaint department (13 state AG's have sued Alyon). Finally, you should also file a complaint with the FTC at www.ftc.gov.

CPU Lockdown

DEAR DOG: I recently discovered that AMD is starting to lock down the multipliers on all its Barton processors, including the 2500+ which was guaranteed to be capable of overclocking to the speed of a 3200+ out of the box.

So far, nobody has been able to understand why AMD is doing this, nor how to unlock these new Bartons that we now call Thortons.

So my question is, why is AMD doing this, why has the company not officially released this bad news, and is there a way of unlocking the procs?

I'm sorry if my issue doesn't actually pertain to an unethical vendor or manufacturer practice. I know that AMD has not done anything wrong. It's just that my friends and I

would like an explanation for this.

—LUCAS ALLEN HESTER

THE DOG RESPONDS: Unfortunately, AMD appears to be succumbing to the same pressures that forced Intel to begin "clock-locking" its processors: bastard remarkers.

Remarkers take overclocker-friendly CPUs which sell for, say, \$80, and set them to speeds they can sell for \$200. Do this a few hundred times and you can see that remarkers have the potential for huge profits. AMD wouldn't comment on just how

much remarking occurred for it to change its policy, but Internet scuttlebutt indicates that enough resellers were receiving trays of remarked processors that AMD had to act.

AMD's clock-locking also

appears to be permanent. In the past, overclockers have removed multiplier locks by shorting processor pins and bridges. Now, like Intel, AMD is using a laser cut at the factory that cannot be reversed. Overclockers may not have control over the multiplier, but they can still increase the CPU speed by upping the bus speed.

AMD's policy extends from the Athlon XP to the Athlon 64 series. The company, however, says it will continue to leave its performance-oriented FX line unlocked. AMD believes FX buyers are enthusiasts and more sophisticated, and thus less likely to get ripped by remarking scams. ■



Low-life CPU remarkers have ruined it for everyone: AMD has now locked down its beloved Athlon XP to prevent fraud.

RECALL ALERT

Kyocera is recalling 140,000 batteries sold with its Model 7135 Smartphones, which may short circuit, overheat, and potentially burn the user. Kyocera says it has received four reports of battery failures with one report of a minor burn.

The phones were sold at Verizon Wireless, US Cellular, and ALLTEL Corporation stores, as well as through web sites and telemarketing retailers, between September 2003 and December 2003. Kyocera says the batteries were also sold separately for \$21. People with the defective batteries should immediately stop using the phone and contact Kyocera for a free replacement battery at 800.349.4478 between 6 a.m. and 6 p.m. Pacific Standard Time, Monday through Friday. More information is available at www.kyocera-wireless.com.

► In other news, Apple has issued a "logic board repair extension" program for certain Apple iBook notebook computers. Consumers had complained for months of image corruption, blank screens, and lines



Some Kyocera Smartphone batteries may overheat and burn users.

on the display. Apple initially refused to say it was a problem with the notebooks but has now done an about-face and has extended the warranty on some of the affected notebooks for three years. Said notebooks have serial numbers in the range of UV220XXXXXX to UV318XXXXXX sold worldwide. The notebooks were made between May 2002 and April 2003, and may have also been referred to as: iBook (16 VRAM), iBook (14.1 LCD 16, VRAM), iBook (Opaque 16 VRAM), iBook (32 VRAM), iBook (14.1 LCD 32 VRAM). Apple says consumers who paid to have notebooks repaired before the program began in January 2004 are eligible for a reimbursement. If your notebook is exhibiting the aforementioned problems, Apple asks that you call 800.275.2273 or a local Apple

Apple has extended warranties on some iBook notebook computers after people complained of a manufacturing defect.



Care Contact Center. Once Apple or a Care Center has your notebook, it will be examined for problems related to the component failure. If problems are due to Apple's defective part, the company will repair it and pay the cost. If evidence of the defective part is not found, repairs will be the consumers' responsibility. More information is available at www.apple.com/support/ibook/faq/.

Despite Apple's voluntary repair efforts, some consumers have expressed dismay at the range of relevant serial numbers. One irate consumer posted a comment on a blog site saying that a notebook that's been repaired three times is outside the serial number range of the logic board upgrade program.

Inside

Quiet your PC.....	28
Achieve total silence.....	29
Videocard overclock.....	30
Tri-monitor setup.....	30
CPU upgrade.....	31
Optimize RAID.....	31
15-second boot.....	32
Back up Outlook.....	32
Recover data	32
Perfect game server.....	32
Wipe your PC clean.....	33
Dispose of an old PC.....	33
Multichannel sound.....	33
News on your desktop.....	34
Increase Wi-Fi range	34
Wi-Fi router tweaks.....	34
Print perfect pics	34
Rip MP3s in one click.....	36
Burn CDs flawlessly.....	37
Fix F-lock woes.....	38
Proper OS install	38
Pocket PC remote.....	38
Palm PDA remote.....	38
Install an LCD.....	38
Install a blowhole.....	40
Organize case cables.....	40
Clean your PC.....	40
Add an air filter	40



The Ultimate

Do-It-Yourself Guide

**We proudly
present 28
amazing PC
projects that
will help you
transform
your PC into
a work
of beauty,
power, and
speed!**

BY THE MAXIMUM PC STAFF

As you read through our scintillating collection of upgrades, tweaks, hacks, and projects, please keep this in mind: Sometimes a man has to take matters into his own hands in order to prove himself.

As we drew up this daring blend of practicality, functionality, and risk-taking grabs for power, *Maximum PC's* lab experts found themselves engaged in a marvelous but scary contest of derring-do and technical brinkmanship. The high point? Technical editor Will Smith's infamous Project 32: How to turn your PC

into a time travel device by using a 16MB USB key.

Unfortunately, moments after proving that it could be done, Will was but a memory. We never heard from the poor guy again, but after digging 140 yards below the *Maximum PC* offices, we did excavate a 12,000-year-old pair of shattered eyeglasses and a single suede slip-on loafer.

But that's enough mourning—let's get on with the projects! (Oh, and if you're looking for Will Smith's Project 32—don't bother. The government confiscated the technology.)

1) Quiet Your PC

Constant fan hum can slowly drive you insane. But silencing your noisy PC is easy—if you follow our simple guide

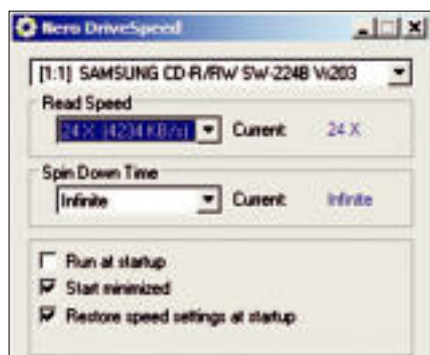
A modern PC is a noisy beast, what with the constant whirring, clicking, and whooshing it typically emits. But fans are vital for cooling hot components, and there's not much you can do to silence loud hard drives. Lucky for you, we're dusting off a few of our favorite tricks. Let's bring your computer's noise level down a notch or three, OK?

Maximum Cooling, Minimum Fans

Fans are the noisiest components in most desktop systems, so it makes sense to do everything you can to minimize the sound they make. Whether you replace your loud fans with quieter models or opt for an entirely different cooling solution, it's important to ensure that the heat generated by your hardware is effectively moved to outside the case.

The first thing you can do to combat fan noise is pare down your airflow scheme to the bare minimum. Disconnect all the fans in your system except for the CPU and videocard fans. Close the case and restart the PC. Now you need to check the temperature in different areas of your case. You can use an application like *Motherboard Monitor* (mbm.livewiredev.com) to keep an eye on your CPU temperature.

After you've run the machine for 15 or 20 minutes, power it down, open the case, and check the temperature on the videocard, CPU, and hard drives by touching them. It's OK for components to be warm, but they shouldn't be hot.



The Nero DriveSpeed utility lets you slow down your speedy optical drives, keeping them quieter and cooler.



This GeForce board sports the silent cooling of a super-sized Zalman heatsink/heat pipe combo.

Re-enable the fans you previously disconnected, one at a time, until you find a satisfactory balance of noise and cooling.

Remember that larger fans turn slower—thus making less noise—while moving the same amount of air. If your PC has mounts for 120mm fans, use them instead of louder, faster 80mm fans.

Don't Be a Fan Boy

If you really want to maximize the cooling you get per fan, you can replace the fans built into some of your components. Today's videocards, for example, are equipped with fans that are frequently louder and more powerful than they need to be, especially if you're willing to sacrifice a few frames per second.

The Zalman ZM801-HP uses a pair of massive heatsinks and a heat pipe to passively cool your videocard's GPU. Although you can use the Zalman heat pipe without a fan, it's a good idea to pair it with a quiet, low-speed fan to get air moving over it. If you'd rather stay completely fanless, you can use *Powerstrip* to underclock your videocard, which will keep the temperatures down.

Several companies are also developing quiet and fan-free power supplies. After testing many different versions of PC Power and Cooling's Silencer (www.pcpowerandcooling.com), we're convinced it's the quietest standard power supply, but it still generates some fan noise. Enter Antec's Phantom: a totally fanless and therefore silent power supply. Instead of relying on a fan to exhaust warm air, the Phantom uses a large heatsink that protrudes from the back of your PC. The Phantom isn't available for sale yet—Antec is hoping to have it on the market

by April. Rest assured, we'll review it as soon we can get one in.

Slow Down Your Drives

Once you have a handle on your fan noise problem, you can turn your attention to the next noisiest parts in your PC—hard drives and optical drives. In exchange for a small performance hit, you can use utilities and firmware updates to silence your drives.



Hard drives are first. If your drive is made by Hitachi, IBM, or Maxtor, your manufacturer provides easy-to-use tools that let you slow seek times and stop your loud drive from clicking. Look for *amset* at www.maxtor.com, or *Feature Tool* at www.hgst.com.

Unfortunately, we don't know how to enable quiet operation modes on drives from other manufacturers.

If you have more than one hard drive, it might be worth upgrading to a single larger drive. As a general rule, two drives are louder than a single drive. The 250GB Maxtor DiamondMax Plus 9 is fast enough for most desktop work.

Optical drives are significantly easier to quiet, but you need the right software. Using the *Nero DriveSpeed* utility, you can ratchet your noisy 52x CD-RW drive down to a silent 32x speed. *DriveSpeed* is installed with Nero by default. Once the app is configured for your drive, you can adjust both the maximum speed and the length of time the drive waits before it spins down after a data access. Don't worry, when you feel a need for speed, you can use *DriveSpeed* to crank the drive back up to full throttle.

The Maxtor DiamondMax Plus 9 line of hard drives combines 7200rpm performance with whisper-quiet emissions. If you're serious about silence, this is the hard drive to buy.

Soundproofing and Filters

The only thing left to do is add some sort of sound-absorbing material to the inside of your case, and apply porous filters over all the intakes and outtakes of your PC. Adding filters, especially to the fans on the front and top of your case, can prevent much internal sound from escaping. (Turn to page 40 for more on adding filters.)

Several types of sound-absorbing materials are available for PCs today—Dynamat (www.dynamat.com) and Magic Fleece (www.frozencpu.com) are among the most popular. Dynamat does a great job absorbing noise and is thin, but if your case has

the extra room, nothing beats the thicker absorbing action of Magic Fleece.

Both materials are easy to apply. First, look at the space in your case to determine how much sound deadener you can fit in different locations. We recommend applying it to the sides and top of your case, and whatever areas of the front are accessible.

Use a newspaper to cut patterns of the area you want to soundproof, then use these patterns to cut the material. One final note: Make sure your pieces actually fit in the desired area before you remove the adhesive. Use double-sided tape to temporarily stick the pieces in place, and then try closing the PC.

2) Completely Silence Your PC

You have several options if you want to truly silence your PC—but they're not for the faint of heart

If you want a *completely* silent computer, you have two options. You either have to water-cool your rig, or build it in a case expressly intended to dissipate heat. Both approaches have downsides, but if you must have peace and quiet, both techniques deliver.

We haven't put a Zalman TNN500A case through its paces in our lab yet, but we have spent hands-on time with a system our sister publication, *PC Gamer*, reviewed that uses the case. By using heat pipes to transfer heat from the CPU, videocard, fanless power supply, memory, and hard drives directly to the exterior of the case, and by adding radiator fins to the outside of the case, Zalman essentially turns the entire case into a giant passive cooler. It's extremely cool, and super quiet. The downside is that this level of cooling costs upwards of \$1,400. Get more info at www.zalman.co.kr.

If you'd rather make your existing case silent, we recommend adding a water-cooling kit. Our current favorite is the Innovatek InnovaSET3 (www.highspeedpc.com). It includes a reservoir, radiator assembly, silent pump, CPU block, and all the tubing and fittings you'll need to get your coolant flowing. Cooling blocks are available for nearly every CPU and videocard.

When you configure a water-cooled rig, there are a few things to remember:

- ▶ Always fully assemble and fill your kit outside your system before you actually install it. It's better to



A water-cooled rig eliminates the need for fans and makes your PC quiet as a church mouse, but beware of leaks!

find out about a leaky reservoir before it spews water all over your \$500 videocard.

- ▶ Use distilled water and a conditioner in your rig. Tap water often contains minerals that can clog your hoses and corrode your pump. Water conditioner will keep the liquid in your system from getting stinky. Plus it's a cool-looking neon-green color.

- ▶ For the first few weeks of operation, make sure you frequently check the water level in your reservoir. The last thing you want is for the water to evaporate, leaving your precious PC exposed to the elements with no thermal protection whatsoever.

- ▶ If you have hot 10,000rpm hard drives, consider enclosing them in cooling thermal jackets. The water-cooled jacket will lower the drives' operating temperature, insulate them from sound, and extend their life span.

3) Overclock Your Videocard

An easy way to get a free performance boost in gaming is to slightly overclock your videocard. Beware: Overclocking does void your warranty, but if you follow our instructions, there's only minimal risk of damage to your hardware.

► First, download and install

Powerstrip. You can get it from www.entechtaiwan.com.

► Right-click *Powerstrip*'s tray icon, and select Performance Profiles, then Configure.

► You should see something that looks like the image on the right. Two vertical sliders will be on the left side of the Performance window. The slider on the left controls your card's core speed, and the slider on the right controls the card's memory speed.

► Increase the core speed in 2MHz

increments. After each increase, test the card's stability by playing a 3D game or running a benchmark. Repeat until you start seeing rendering errors during your testing, then crank the core clock back down until the card is stable.

► Increase the memory clock in the same slow increments, making sure to test between each increase.

► Enjoy your new, faster frame rates!



***Powerstrip* makes overclocking your videocard as easy as moving a slider. So what's your excuse now?**

4) Set Up a Tri-Monitor Display

INGREDIENTS: You'll need three monitors, an AGP videocard with dual outputs, a PCI videocard, and an operating system that can cope with multiple monitors.

We've found that PCI GeForce2 MX cards will work with just about any other mainstream card, and Windows XP has the best operating support for multiple monitors.

► Before you install the PCI card, we recommend you download the video drivers for the PCI card, and store them somewhere you'll be able to find them later. Then shut down your PC, install the PCI card, and reboot. Connect monitor cables to each output on the videocard. Make sure that the monitor you want to use for

gaming is connected to your AGP card.

► Boot into Safe Mode by repeatedly pressing F8 from the time you power up the computer until you see the Safe Mode menu. Once Windows has started up, install the drivers for your PCI videocard. Once the drivers are installed, reboot the PC and boot into Windows.

► Once Windows starts, you'll need to enable the second and third monitors. Go to Start, Control Panel, Display, and click the Settings tab. Right-click each of the grayed out monitors and click Attached, then press Apply. Press Identify, then drag and drop the monitor icons on the Control Panel until the displays on screen

are arranged in the same way as your physical monitors. From this panel, you can also adjust the resolution and refresh rate of each monitor.

► If you're having problems getting your system up and running again, you may need to make a slight BIOS adjustment. First, enter your BIOS and go to the Init Display First setting—it's usually in Advanced BIOS settings. It should be set to either PCI or AGP. We've found that some systems require that the PCI display initializes first, while others require the AGP display to initialize first. You'll have to experiment a bit.



Install a second videocard and add a third monitor for mondo screen real estate!

5) Upgrade Your CPU

Upgrading your CPU can be a fast and simple way to invigorate an aged system. The process is not difficult, but it is important to exercise caution during the upgrade because the CPU can be damaged if not handled correctly.

Before purchasing a new CPU, make sure your existing motherboard will support it. (See our chart for general compatibility.) Also, be sure to check the motherboard manufacturer's web site for a BIOS update which may add compatibility for higher processor speeds.

To help prevent damage to sensitive components, make sure you are properly grounded whenever you touch or handle computer hardware. To this end, you should periodically touch the metal parts of your case or power supply or buy an antistatic electricity wristband. You may find it easier to perform this and many other upgrades if you first remove the motherboard from the case.

► First, unplug the system and disconnect all the attached cables. Open the case and lay it on its side. Locate the CPU fan's power supply and unplug it from the motherboard connector.

► Remove the heatsink/fan (HSF), which is held in place by metal clips that are attached to plastic retention tabs on the CPU socket. One of the metal clips will have a groove into which you should insert a flat head screwdriver. Apply an even downward pressure and push down and out until the clip is released. Now remove the HSF. Be careful to not let the screwdriver slip—it can damage your motherboard.

► Raise the metal CPU retention lever located on the socket. The socket will slide to the side, releasing the CPU.

Remove the old CPU from the socket.

► Install your new CPU, taking care to properly align the pins in the socket. Lower the CPU retention lever. Now install the new HSF according to the manufacturer's directions. Secure the metal clips using the same method used to uninstall the old HSF. Now connect the fan's power supply to the motherboard connector.

► Start up your system and make sure the fan is working and the CPU is properly recognized by your motherboard. Close your case and you're good to go!

CHIPSET	CPU SUPPORT
VIA KT133, KT133A, KLE133	Athlon, Duron
VIA KT266, KT266A, KT333, KT400	Athlon, Duron, Athlon XP
VIA K8T800	Athlon 64, Athlon 64 FX FX-51
AMD 760	Athlon, Duron, Athlon XP
AlI MAGiK 1	Athlon, Duron, Athlon XP
SiS 733	Athlon, Duron
SiS 735, 745, 748	Athlon, Duron, Athlon XP
SiS 755	AMD 64
nVidia nForce 415-D, 420-D, 615-D 620-D	Athlon, Duron, Athlon XP
nVidia nForce2, nForce 2 400	Athlon, Duron, Athlon XP
nVidia nForce3	AMD 64
nVidia nForce3 Pro	AMD 64 FX, FX-51
ATI Radeon IGP 320	Athlon, Duron, Athlon XP
ATI Radeon IGP 330	P4, P4A
ATI Radeon IGP 340	P4, P4A, P4B
ALi ALADDiN-P4	P4, P4A
Intel 845, 845E, 850	P4, P4A
Intel 850E, 865P	P4, P4A, P4B
Intel 875P	P4, P4A, P4B, P4EE
VIA P4X266, P4X266A	P4, P4A
VIA P4X333	P4, P4A, P4B
SiS 645	P4, P4A
SiS 645DX, 648	P4, P4A, P4B

6) Optimize Your Striped RAID Array

Everyone knows striped RAID is faster than a greased chicken, but many people overlook the fact that it's possible to optimize an array to perfectly suit its potential workload. When creating the array, one screen usually lets you choose a specific "block size," also known as the "stripe size." This refers to the size of the data chunks that are saved to your drives. If you choose a 64K block size and have a 128K file, it will be written to both drives because each drive will receive a 64K chunk. If you had a 256K file, the file would be broken up into four chunks; two for each drive. But if you have a 48K file, it will reside on just one disk, thereby negating the advantage of parallel pro-

cessing afforded by RAID.

In general, desktop users and gamers should stick with a stripe size between 16K and 64K. These small blocks tend to offer the biggest performance boosts in both disk I/O as well as transfer rates. However, if you do a lot of work with huge files, such as those created in *Photoshop* or *Premiere*, a stripe size of 512K to 1024K will do wonders for transfer rates and drive performance. If you're interested in a larger block size, check the RAID controller's specs before purchase; while every RAID chipset offers small block sizes, few offer the option of large block sizes.

7) Lower Your Boot Speed to 15 Seconds

► Start with the basic fast-boot tweaks. In the BIOS, disable “Floppy Drive Seek” and select the disk on which your OS is located as your First Boot Device. Empty your Start menu’s Startup folder, and in the System Configuration Utility, clear the checkboxes of all but one or two of the most essential Startup items. Also, turn off any and all unnecessary Services (aim for a maximum of 25 Services set to Automatic and/or Manual). Finally, defrag your hard drive; then download and run *BootVis* (which is no longer available on Microsoft’s site, but can be found via a half-second Google search.)

► Our first order of business is to lose Win XP’s “Luna” interface. It looks great, but it’s slowing you down, pal. Click Start, right-click My Computer, and select Properties. Navigate to the Advanced tab and click the Settings button under Performance. Select “Adjust for Best Performance,” and click OK.

► Give your proc and RAM a boost by taking down your wallpaper and removing all but one or two desktop icons. While you’re at it, know this: Everyone but you finds your Windows sound scheme obnoxious. Spare their ears and improve your system’s boot speed by clicking Start, navigating to Control Panel,

and selecting Sounds and Audio Devices. Once there, click the Sounds tab, select “No sounds” in the Sounds scheme pull-down menu, and click OK.

► Now let’s get rid of your fonts. The sad



The System Configuration Utility is one of the first stops on the road to a speedy boot. Check /NOGUIBOOT to disable the Windows startup screen and shave a few seconds off your startup time.

truth about fonts is that the more you have, the slower your boot time. This is especially true for machines with more than 500 fonts. If your font collection exceeds the 84 that XP comes stocked with, create a folder outside of the Windows directory and move the fonts there. You can move them back to the Fonts folder when they’re needed.

► Disable the Windows startup screen to shave off an extra second or two. Press Start, then Run, then type `msconfig`, and press Enter. Navigate to the Boot.ini tab and check /NOGUIBOOT. Click Apply, then OK.

► Generally speaking, the simpler your hardware setup, the quicker your machine will boot. If you have unused hardware devices listed in your Device Manager, disable them. Press Start, then Run, then type `devmgmt.msc`, and click OK. To disable a device, click on the device in question and select Disable. (Unused peripherals integrated into your mobo should be disabled in the BIOS.)

► One of the biggest culprits of a slow boot—and OS rot in general—is a mangled videocard driver install. Prior to your next videocard driver update, download and install Driver Cleaner (www.driverheaven.net/cleaner/). This utility removes all traces of previous nVidia and ATI drivers and ensures that your box is squeaky clean for your new Forceware and Catalyst drivers.

► As part of your regular computer maintenance, periodically delete the contents of your prefetch folder to remove outdated entries. Navigate to `C:\WINDOWS\Prefetch`, press Ctrl +A, and then press Delete.

8) Back Up Outlook

If you’re smart and determined to avoid a catastrophic communications breakdown in the event of a nasty crash, you back up your *Outlook* folders periodically. If not, shame on you! Here are two easy methods:

► You can manually back up your *Outlook* files by using the Import/Export command under the File menu. Choose the “Export to file” option from the dialog box then choose the Personal Folder File (.pst) option. Select the relevant folders, give the file a name, and choose a location to save it to. We recommend backing up to your hard drive and to a CD-ROM.

► Microsoft also offers a free add-in for *Outlook* called Personal Folders Backup that will automate the process for you. You can download it from Microsoft’s web site at www.microsoft.com/downloads/.

9) Recover Data from Dead Media

► If a floppy that you need data from has “died,” don’t wreck it by flinging it across the room or running *Scandisk* on it over and over until smoke appears. If the data is really valuable, it’s important to protect the original. Flip the write protect to On to prevent further damage.

► A misaligned floppy drive can often be the culprit of a seemingly dead disc. Try reading the floppy disc in various other machines, especially older PCs—they often have worn out drives that have a little more “give” to them.

► Download NetZ’s *ResQfpy*. It’s available for free at www.invincible.com. This old but nifty utility first lets you clone the bad floppy disk and then experiment on the clone. This may seem unethical to some folks, but whether you’re talking data, sheep, or humans, tam-

pering with a clone is far better than jeopardizing the original. Just ask Jango Fett.

► Boot your PC using a DOS disc and run *ResQfpy*. It will prompt you to make an image of the floppy. Run *ResQfpy* again to copy the image from your hard drive to a new floppy that has been formatted for DOS. (Note: The program calls for you to run it from DOS but we’ve actually run it from Windows XP without incident.)

► Once you have your clone, try running *ResQfpy*’s FixBoot utility on it by typing `FixBoot /S` from the DOS prompt. This will recreate the boot sector on your cloned floppy and hopefully allow you to access your data—if the problem was simply a bad boot sector. If this fails, you can fall back on Win XP’s *Scandisk* or *Chkdsk* without any fear of destroying your original data.

10) Find the Perfect Online Game Server

► It’s easy to argue that the best gaming server is the one on which your friends are playing. If this is the case, download *XFire* from www.xfire.com. It’s a handy Instant Messenger-like app that allows you to quickly see what your friends are playing and what server they’re on. And in a quasi-Friendster way, it can even help you locate friends of friends for instant deathmatching.

11) Wipe Your PC Clean

If you sell your hard drive or give your PC away, it's better to be safe than to end up paying for some ex-con's summer in Cabo San Lucas. Don't just format your drive—wipe it absolutely clean.

► Go to <http://dban.sourceforge.net/>, where you'll find *Darik's Boot and Nuke* (the name says it all). If you have a floppy drive, download the floppy version. If you don't, download the CD version instead; you'll need to burn the disk

image (in ISO format) to a CD. Make sure you note the important version information on this page.

- Boot from the floppy or CD.
- Press Enter to go into interactive mode.
- Press the space bar to select the entire drive, or just a specific partition.
- Press R to select rounds, and enter 7 (that's the official Department of Defense standard).
- Press F12, and kiss your data goodbye.

12) Get Rid of Your Old PC

► Dell offers a breathtaking deal: \$15 buys you the pickup and disposal of up to 50 pounds of computer equipment. What's more, for a limited time, the company has dropped the price to \$5! Check out www.dell4me.com/recycling right away. Scheduled pick-ups occur in two or three days.

► Hewlett-Packard's pricing schedule is a little more Byzantine, but an online order form will give you an immediate quote. HP says the service ranges from \$13 to \$34 per item, and scheduled pickups occur in two or three days. Go to <https://warp1.external.hp.com/recycle/> and feel good about yourself.

13) Optimize Multichannel Surround Sound

There's a difference between having a 5.1 speaker setup and having your 5.1 speakers *set up*. Here are some tips on how to get the most performance from your multichannel speaker system.

► Make sure the front two satellites form an equilateral triangle with the listening spot. The front-channel speakers should be the same distance from each other as they are from the listening spot.

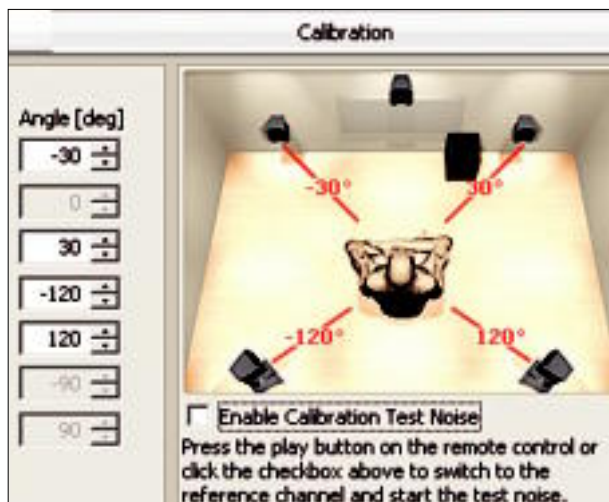
► Find the best location for your subwoofer by placing the sub where you would normally sit, and then playing a bass-heavy movie or MP3. Now crawl around the room. When the bass sounds ideal, you've found your spot for the subwoofer.

► The rear-channel speakers should be behind you, but the optimal angle of the satellites can vary with your furniture and walls. Try turning the satellites toward the listening area, then try them facing straight ahead. Also try facing them into a corner behind you—sometimes bouncing the sound off a corner provides the best positional audio.

► Upgrade your speak-

er wire. High-quality audio cables have a thicker gauge for less resistance, and usually have highly conductive tips for a better connection to the speaker.

► Calibrate your speakers. Most surround systems and some soundcards include a pink-noise test signal you can use to check the polarity of the speakers as well as the separation between channels. You should always perform this test to ensure proper speaker placement when experimenting with different speaker locations.



Creative Labs' speaker calibration utility is one of the best around, and lets you input the height of the satellites as well as their angle relative to the sweet spot.

14) Get News Delivered Directly to Your Windows Desktop

Take advantage of Rich Site Summary (RSS) to push the latest headlines and updates from your favorite web sites directly to your computer. Here's how we set up ours:

- ▶ First, download and install an RSS aggregator program. An aggregator is a program that monitors a site's RSS feed and downloads the content for your perusal. We like i-System's free and easy-to-use *Feedreader*, available at www.freereader.com.
- ▶ Next, find RSS feeds for the aggregator

to monitor. A good place to start is Yahoo's News section, which offers a large number of RSS feeds covering a variety of topics. Individual sites such as Slashdot.org and ESPN.com also offer RSS content.

- ▶ Copy the RSS feed's URL and add it to *Feedreader* by clicking the New button and pasting it into the dialogue box. *Feedreader* will now connect to the feed and download all the content available. It will then give you a short synopsis of each headline along with the option to view the full story, either through your Internet

browser or within the program itself.

- ▶ *Feedreader* automatically checks for news headlines at set intervals and alerts you when they become available. Many sites utilize RSS feeds as a way to alert readers to site updates. If you set the aggregator to check for updates often enough, you can stay informed and up to date with the major news headlines and updates to your favorite web sites almost as soon as they appear. Beware: Netiquette suggests a minimum RSS refresh time of 90 minutes.

15) Increase Your Wireless Range

We keep hearing all this gobbledy-gook about the omnipresence of wireless networks, but it's obviously a damn dirty lie. Sure, your wireless network works great in your living room and kitchen, but there's never coverage where you really want it, like in the downstairs "reading room" or your backyard. It's easy to extend your wireless coverage with a simple hardware purchase. What you need is a repeater, and it can

be had for about \$100. We tested the D-Link DWL-G800AP, which we configured to work with our access point and placed near the perimeter of our existing wireless coverage area, with tremendous results.

D-Link's DWL-800AP+ will quickly and easily extend the coverage of your Wi-Fi network.



16) Add New Functionality to Your Linksys Router

The insanely popular Linksys 802.11g Wi-Fi router, model number WRT54g, uses firmware based on the Open Source operating system Linux. Because of its Open Source lineage, Linksys makes the source code for the router's firmware available to anyone who asks for it. The practical upshot is that there are loads of independent programmers adding neat new features to the WRT54g—if you're brave enough to upgrade to unsupported firmware.

New features include: support for several different types of virtual private networks, advanced firewall management, and bandwidth throttling for different types of traffic. Bandwidth throttling is particularly cool; it lets you prioritize bandwidth for critical applications—like *Battlefield 1942*—while downgrading the importance of mere downloads or *Kazaa* traffic.

The firmware install procedures are constantly changing, but you can visit <http://h.vu.wifi-box.net/wrt54g> for current updates and the latest install instructions.

Warning: Upgrading to unsupported firmware voids your warranty and could permanently damage your router. But hey, a new one is only 60 bucks.

17) Print Perfect Photographs

- ▶ Buy the best paper you can get from your printer's manufacturer. Not all third-party paper is bad, but cheap paper means cheap-looking prints.
- ▶ Don't skimp on ink. Low quality ink affects color and may fade faster than ink from the manufacturer.
- ▶ Calibrate your printer. Most print heads need to be recalibrated when you change the ink cartridge. Go into your print driver's setup and tell it to calibrate. This will realign the nozzles and ensure they spray ink in the appropriate places.
- ▶ Clean the inkhead. Inkjets that haven't been used for a month or more tend to clog. Run your printer through its cleaning cycles a few times to rid prints of that annoying streaked look.
- ▶ Air out your photograph. Today's prints may dry quickly to prevent smears, but most paper and ink need time to breathe and may change color for the better.



18) Rip CD-Quality MP3s with One Click

Even if you're happy with your MP3 collection, *Maximum PC* begs you to try this method—you'll quiver with pleasure when you hear the difference!

If you want a maintenance-free MP3 collection that sounds as good on your portable player as it does on your uppity home audio system, we've got the solution—and it's free! (The software, that is—not the music.) The secret lies in three components:

- ▶ A ripper that won't let bad extractions through the gate.
- ▶ A sophisticated MP3 encoder that delivers sparkling audio at reasonable file sizes.
- ▶ A process that isn't a chore to complete.

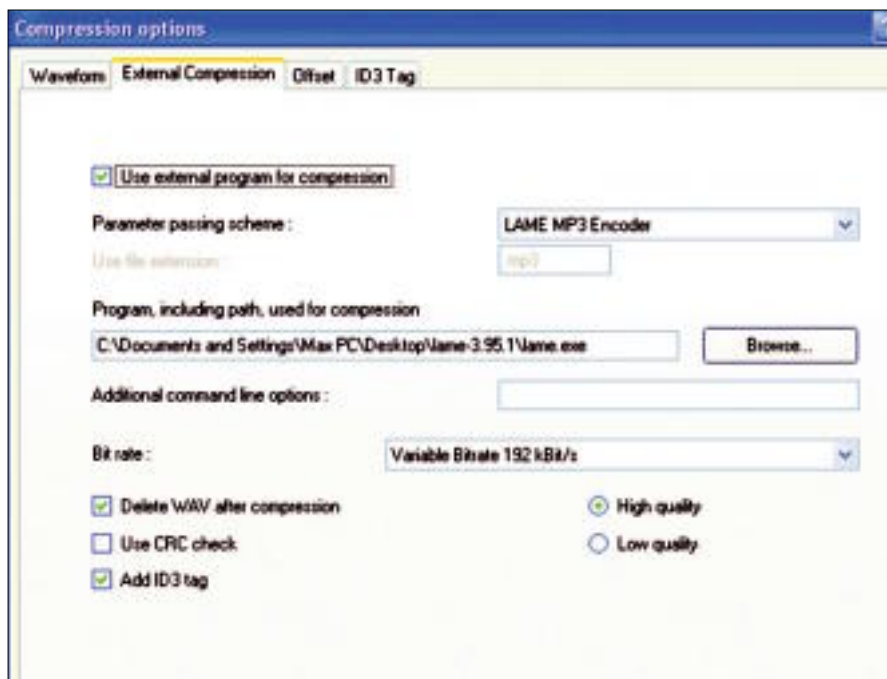
We engineered a process that automatically looks up your CD information on freedb.org after you insert the CD, and with a single click will rip the contents, compress the music using the *LAME* encoder, name, number, and tag the tracks for you, create folders for artist and album, and neatly tuck each track into the album folder. Grab your CDs, and let's get started.

Download EAC and the LAME Encoder

If you want spectacular rips from your CD collection without having to worry about reviewing every track for flaws, you need *Exact Audio Copy*—download it at www.exactaudiocopy.de, and don't forget to send the author a postcard! Unlike other ripping apps, *EAC* double-checks every bit for accuracy against the original; if it finds discrepancies, it reads the data again, and yet again if necessary. As a result, it's intrinsically slower than other rippers, but with the automated process we're about to show you, it doesn't matter. You'll also need the *LAME* encoder, which has long been acknowledged as the finest MP3 encoder available, and it's free to boot. The current version at press time is 3.95.1 and you can download it at <http://mitiok.cjb.net/> (if the server is down, just Google "LAME encoder" for an alternative site). Unzip both applications into the same directory.

Configure EAC

EAC is extremely friendly to power-users, and offers oodles of control over the



In the External Compression dialog box, note that you can elect to have *Exact Audio Copy* delete the WAV files after converting them to MP3.

ripping process. This means the initial configuration can be overwhelming. But don't sweat it—here's our tab-by-tab configuration guide. Change only the following settings.

▶ On first launch, *EAC* will perform an initial drive test. When asked, select Optimization for "accurate results." You'll need an audio CD handy to allow the program to test your drive's error-correcting capabilities. If you have multiple optical drives, *EAC* will default to what it considers to be the best drive, though you have the option of changing this in the Options menu. *EAC* also graciously offers to configure *LAME* parameters for you. It will begin to search your drive for the *LAME* executable. Trust us, it's much faster to cancel the search and point *EAC* to the executable yourself. When asked, select the "standard" *LAME* setting option—for now. Finally, choose the Expert interface option, because that's where the action is these days. Now we're ready for some fine-tuning.

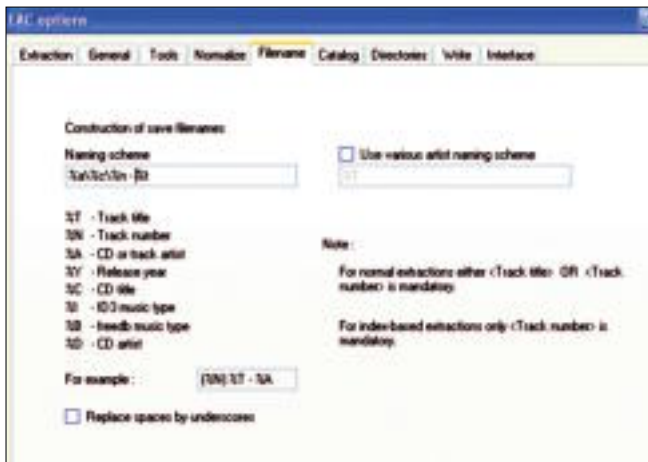
▶ From the *EAC* > *EAC* Options menu,

select the General tab, and check "On unknown CDs," then click the "Automatically access online freedb database" radio button.

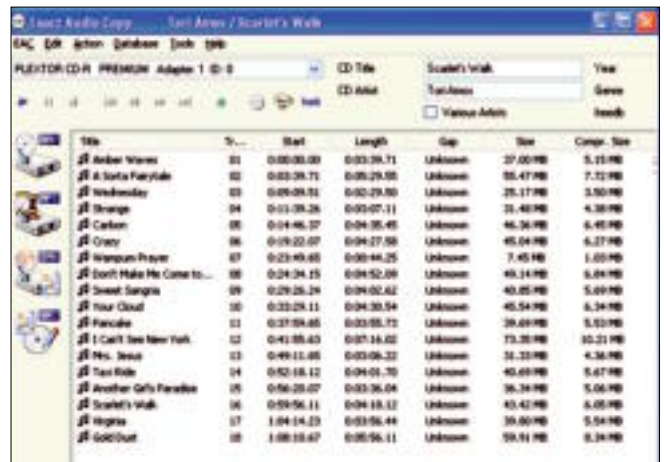
▶ Now select the Filename tab, and under Naming scheme carefully type %A\%C\%N - %T (including the space before the %T tag). This will result in a directory structure that creates a folder from the artist name, a subfolder with the album name, and numbered tracks within the album folder, like this: Yma Sumac > Mambo > 04 - Chicken Talk. You can't designate an exact position (using C:\, for example); you'll get to specify your music directory in the next step.

▶ Select the Directories tab, and then choose "Use this directory." Point *EAC* to the folder you want to store your music in.

▶ Go to the *EAC* > Drive Options menu. The box marked "Drive is capable of retrieving C2 error information" might already be checked. Leave it the way it is, but if, after ripping your first CD, you hear audible flaws in the tracks, it means your drive might not report error-correction information properly. If so, uncheck



The Filename dialog box lets you assign metadata to folders by following the field with a backslash; “%C\” creates a folder with the CD title and stuffs your tracks into it.



Exact Audio Copy uses the freedb.org online database to automatically fill in disc data.

the box. Do not uncheck Secure mode—this is exactly what makes EAC special!

► Go to the EAC > Compression Options menu. Select the External Compression tab and make sure the LAME MP3 Encoder is displayed in the “Parameter passing scheme” pulldown box. If it isn’t, select it.

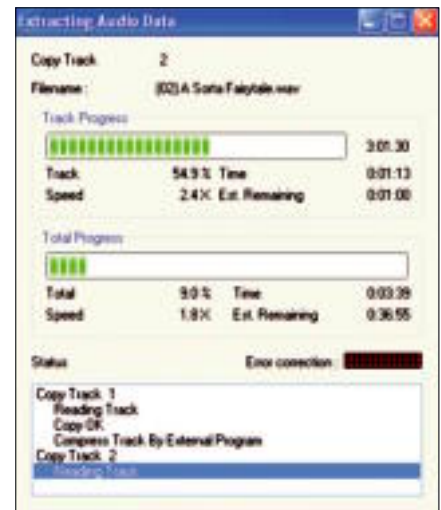
► Go to the “Bit rate” pulldown menu, and select Variable Bitrate 192Kbps. We’re happiest with variable bit rate encoding (VBR), which raises the bitrate during complex portions of music, and lowers the bitrate during quiet or simple portions. But your MP3 player may not support VBR playback, or your disk space might be limited. In the former situation, you’ll still get fine results with constant bitrate (CBR) encoding at a minimum of 192Kbps. In the latter situation, drop down to as low as you can stomach; 128Kbps CBR, for example, is okay if you listen to your music through cheap earbuds at the gym. But aren’t we looking for the *perfect-sounding* MP3?

► Go to the EAC > freedb Options menu. Confirm that your e-mail address is correct in the e-mail field, and click the “Get active freedb server list” button.

Test Run

Wow! Thank heavens you only have to go through that process once. Now we’re ready to make sure all our settings are correct before happily ripping away. Put an audio CD in the drive. EAC should automatically query the freedb server for track data. Annoyingly, it’s sometimes reluctant to do so. If this happens, just press Alt-G.

Now click the MP3 button on the taskbar to the far left. Remember, EAC is not a fast worker. It’s not supposed to be—it’s a careful one instead. Depending on the condition of your CD and the accuracy of your drive, the ripping process could take a while. When the test run is finished, review your tracks. If they are blank or there are any errors, shout out “D’oh!”, then double-check the settings above. If the settings look good, try downloading the Nero ASPI layer at [ftp://ftp6.nero.com/wnaspi32.dll](http://ftp6.nero.com/wnaspi32.dll) (your PC can’t rip music without an ASPI layer). Put it in the same directory as EAC and try the test again. You can get troubleshooting help from the forums at the EAC web site, or check out Chris Myden’s spectacular



Exact Audio Copy is not speedy, but it’s still the most sophisticated and effective ripper we’ve ever used. And it’s free!

exploration of the program’s options at www.chrismyden.com. (From the home page, click “Elite DAE” from the column on the left side of the page.)

19) Burn CDs Flawlessly—Every Time

Despite the best efforts of the music industry, producing *perfect-sounding* burned CDs has never been easier. Here’s some simple advice for good results every time.

► Don’t burn audio CDs at rates higher than 24x. Due to the unique error-correcting scheme used by audio CDs, faster recording leads to more errors and gradual loss of fidelity.

► Don’t burn at greater than 4x to avoid

compatibility problems with fussy car audio systems.

► Always use brand-name media; at the very least, higher-quality media will extend the life of your disc.

► For higher compatibility with consumer electronics equipment, always “finalize” your disc (check your software documentation to find out where this option is).

► Always record in Disc-at-Once mode (instead of Track-at-Once)

► If you are recording a live show or a disc with songs that crossfade, make sure to eliminate the pauses between tracks if your burning software allows it.

► If you are making a “mix” CD, make sure to normalize the volume levels from track to track. Some recording software includes this feature, or you can do it yourself (and get better results) with *MP3Gain*, available for free at www.geocities.com/mp3gain.

20) Work Around the F-Lock Key on Your New Keyboard

The F-Lock key on newer Microsoft and Logitech keyboards is, simply put, the bane of any hardware tinkerer's or gamer's existence. It works just like Caps Lock and Num Lock, except for one minor problem: When F-Lock is disabled, the F-keys (F1 through F12) have new

"improved" functions. F-Lock is turned off by default, and there's no way to change that. So when you need to get into the BIOS on your fast-booting PC, you have to scramble to press the F-Lock key, and then manage to press F1 in the second it takes any modern BIOS to boot.

Luckily there are fixes for both Logitech and Microsoft keyboards available on the web. A Registry hack for Microsoft keyboards can be downloaded at www.mvps.org/jtsang/flock.html and the Logitech keyboard fix is at www.ben.pope.name/logitech.html.

21) Properly Install Your Operating System

Installing your operating system used to be fairly straightforward, but with service packs, chipset drivers, and different versions of DirectX, it's difficult to know the order in which updates should be installed. Once and for all, here's everything you need to know.

► First, install Windows XP. Seems self-

explanatory, but you never know.

► Before you connect your PC to the Internet, go to Control Panel, Network Connections, and Properties. Then go to the Advanced tab and enable the Internet Connection Firewall.

► Once XP is installed, install Service Pack 1.

► After you install the service pack, install

your motherboard's chipset drivers.

► Install the latest version of DirectX.

► Install your videocard drivers, and reboot. Then install the drivers for the rest of your hardware, rebooting as needed.

► Finish by visiting www.windowsupdate.com and installing all the Critical Updates for your PC.

22) Turn Your Pocket PC into a Universal Remote Control

Using a Pocket PC to control all your audio and video equipment is exactly the kind of thing that could make people from primitive cultures worship you as a god.

► Some handhelds include consumer infrared (CIR) transmitters (as opposed to the weaker infrared transmitters intended for device-to-device transfers) and a software program called *Nevo* that will allow you to automatically call up codes for your TV, DVD player, and other electronics. You can also set macros that sequentially perform multiple tasks.

► If your Pocket PC doesn't have *Nevo*, or the infrared transmitter doesn't, well, transmit very well, we recommend installing Griffin Technology's *Total Remote* (www.griffintechnology.com). *Total Remote* comes with a transmitter module that uses your PDA's audio jack to dramatically extend the range of your Pocket PC.



One remote fits all—now, there's no reason to get up ever again.

23) Turn Your Palm PDA into a Universal Remote Control

► Palm users can get in on the fun with the excellent *Novii Remote* (\$25, www.novii.tv). The colored buttons, while a little garish, are extremely easy to distinguish from one another. The gray-scale version also uses different button shadings, so finding the pause when you're playing back your recording of Janet Jackson's Super Bowl mishap is a snap even in low light.

Simply install the software and follow the Quick Start guide to set up your devices. If a device isn't listed, you enter a learning mode in which you point the remote control at your Palm's IR port and "teach" it each button; a process that's as easy to do as it is ridiculous to watch.

24) Install a Multipurpose LCD on Your Case

Looking to doll up your PC while adding some functionality at the same time? Say hello to our little friend the multifunction LCD case display. We decided on a subtle adjustable fan and temperature display—the UC-A8FATR4 by Maxpoint (www.maxpoint.com). Here's how to set it up. (If you're looking for something more high-powered, we recommend the Matrix Orbital MX Series, www.matrixorbital.com.)

► RTFM! The manual will alert you to anything unique about the installation you're about to undertake.

► If you plan to install a hard drive, mount it to the included drive kit first before installing the panel in the drive bay. (Actually, you may want to attach the mount kit to the panel even if you don't install a drive at this point—just so you can keep all the pieces together.) Install the panel into the 5.25-inch drive bay and secure it tightly so it doesn't move around when you are pushing buttons.

► Put the CPU heat sensor and fan sensors in place before you power up your system. Use your panel's power splitters to plug the power cables into the fans.

► Turn on your PC to power up the panel; it's easy to configure the alarm settings and fan speeds for your system.

► Make sure your installation is working properly by testing the fan speed adjusters and by double-checking the panel's CPU reading against your BIOS. If your BIOS doesn't give a temperature, download and use *Hmonitor* from www.hmonitor.com.

► Once everything is working properly, power down your PC so you can reroute the cables and replace the side panel. Enjoy!

25) Install a Blowhole in Your PC Case

A blowhole adds extra cooling to your PC in the same way that opening a window in your house cools it down. Warm air circulating through your system is pushed by a fan through a hole in the case, thereby lowering the internal temperature. Note: This project requires cutting a hole in your PC case. But don't be intimidated!

► For this project, you'll need: a power drill with a 3-inch hole saw, a Dremel power tool with a deburring attachment, a straightedge, safety glasses, four grommets (rubber washers), four screws, one grill, and one 80mm fan.

► Figure out where on your case to install the blowhole to maximize the airflow gain. We recommend placing it on the side of the case over the PCI cards or on

the top of the case in the center.

► In the desired spot on the case, outline your fan using a pencil, then use a straightedge to draw lines connecting each corner of the drawn square. The center of your X is your center mark for the drill. Measure twice, drill once. For an 80mm fan, we use a 3-inch metal hole saw.

► Before you begin drilling, use clamps to secure the case panel to a sturdy surface or have a friend help you hold it down. Make sure you don't do your drilling over carpet, or you may have to wear shoes for the rest of the carpet's life. Now would also be a good time to put your safety goggles on.

► Once you're finished, use the Dremel's deburring attachment to grind down the

rough edges on the case so that it looks clean and doesn't cut your fingers later. Consider the Dremel an essential tool if you're going to do any more case modifying; its multifunction nature makes it our favorite.

► Determine the location of your fan's screws by placing the fan over the hole and marking the screw holes.

► With the fan on the inside of the case panel, place a grommet between the protective grill and the outside of case panel to reduce vibration—like you would use a washer when installing the fan. Screw all parts together.

► Go ahead and connect the power to the fan to test it out before you replace the panel. Mama, I'm a man now!

26) Organize Your PC's Cables and Increase Airflow

Isn't it time you got past the shame of your PC's messy, tangled cables and did something about it? In addition to being more aesthetically pleasing and improving the ease with which you can upgrade components, neater cable wiring makes for better airflow. Better airflow makes for lower temperatures. Lower temperatures make for increased stability. Increased stability makes for a happier you.

► The first step to tidier airflow is to upgrade to rounded cables. Flat and hard-to-manuever standard IDE cables typically block a lot of airflow. Rounded cables are much easier to deal with.

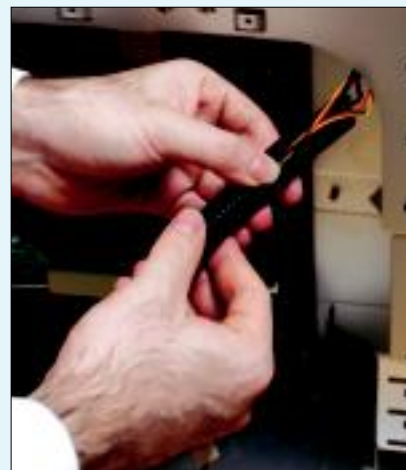
► If your PC is a rat's nest of cables, unplug them and straighten them out. If you think you may forget how to reconnect everything, label the various wires

with masking tape and a pen.

► Use cable ties to wrangle your cables back under control, but make sure to leave some slack—you want to be able to replace or move a drive without having to untie the whole bundle. Anchor your cable ties with an adhesive base to the bottom or side of your case to keep them out of the way and make them stay put.

► Wire looms (pictured here) are another way to organize your cables; for maximum effect and ease of use, tie your cables using a cable tie, then insert them into the loom. Wire wraps provide an even tighter bundle than wire looms, but require more effort.

► Visit www.cableorganizer.com for tons more information, hints, and tips regarding cable organization.



Tie up your cables and insert them into either a wire wrap or loom (above) to organize your PC's cabling and increase airflow and cooling.

27) Clean Your PC in 8 Easy Steps

► To begin, unplug the system and monitor and disconnect all the cables.

► Wipe down the exterior with a clean cloth.

► Open the case and use a can of compressed air to clear built-up dust.

► Use your vacuum's hose attachment to suck up any major dust clumps from the bottom of the case.

► Clean and replace the fan filters.

► Wipe down the exterior of your monitor with a clean cloth. Carefully clean the screen with a soft cloth and a weak solution of water and isopropyl alcohol. Never apply the liquid directly to the screen; always apply it to the cleaning cloth.

► Vacuum the keyboard with your vacuum's brush attachment.

► Wipe down your optical mouse. If your mouse is non-optical, pop out the roller ball, take a pair of tweezers and clean the build-up from the rollers. Wipe down the ball and replace.

28) Put an Air Filter on Your Case Fan

Installing a fan filter is an inexpensive way to keep dust, hair, and Cheetos crumbs from getting inside your case. Be sure to choose one that conforms to the size of your case fan, is easy to clean, and won't choke your system's airflow.

► Install the filter on your case's front intake fan. You could mount filters on all your fans, but we're only concerned about the air getting into your case, not out of it.

► Once installed, be sure to clean the filter periodically to ensure consistent performance. ■



Google Inside

How Google searches the world in two-tenths of a second



1 When you press Search...
Your query is irrevocably entered into the system. Whether you searched for 'CPU reviews' or 'goat pr0n' your results are less than half a second away.

2 Google's web server hands off your search to the index server
Your search begins at the web server that hosts www.google.com, but it doesn't stay there for long. It's immediately passed off to Google's powerful index servers.

5 Your search results appear!
The final results appear on the results page, sorted by the PageRank score of each result. The results even include a relevant excerpt, courtesy of the document servers. Shockingly enough, only two-tenths of a second have elapsed.

4 Document servers prep and deliver data
The document servers attach cached versions of the result web pages to the query results and prep them for the results page.

3 Index servers find the perfect match
The index servers compare the terms in your query to the millions of terms in Google's index. Then they determine which web pages contain all of the same terms, and pass them off to the document servers.



Out

We found an anonymous insider at Google to help us explain the world's best search engine. Our mission: to uncover what software and hardware makes the world's best search engine tick.

BY ALICE HILL

We've read hundreds of articles that prattle on endlessly praising Google's virtues. Google as a cultural phenomenon. Google as a verb. Google as a way of life. Blah. Blah. Blah. But *Maximum PC* isn't *The Today Show*. We prefer hard facts to cultural context any day of the week. For example, how does a simple search box rip through 200 million queries a day? How does it sort all that information in a way that is truly relevant? And finally, how does Google display those results in less than half a second?

And then there are the tough, behind-the-scenes questions. Are the folks at Google running some sort of hopped-up supercomputer?

(Short answer: not exactly.) Do clandestine server farms operate across the globe in unmarked data centers? (Yes.) How does virtually every question or key word posed to this simple-looking search page manage to locate information and news that is truly useful? (Um, that's complicated.)

To get deep inside the amazing technologies behind Google, we found an employee willing to share some facts, on the condition he remain anonymous.

Which means that, as usual, we've got answers.

To our delight, it turns out Google's original hardware comes from one of our favorite Silicon Valley institutions: Fry's Electronics. We're talking old-school Fry's, complete with hitching post and wagon wheels. Which bears little more than a passing resemblance to the prettied-up chain competing with Best Buy and CompUSA in strip malls across North America. According to our source, Google was literally built upon the shoulders of PCs: "We drove to Fry's, picked out the cheapest Linux desktops we could find, and built it all ourselves."

To this day, more than 10,000 PCs running Red Hat Linux operate in what our Google friend calls a "highly replicated environment." This means that each computer is more like an adjoining cell in a massive hive. The engine is powered collectively yet remains invulnerable to the failure of a single unit. When a box does fail—and many can and do throughout the day—the overall system doesn't miss a beat. New machines can be added to the mix without a second of downtime.

In fact, according to our source, Google has the single largest installation of Linux machines in the world. But getting perfect searches isn't as simple as buying your own miniature server farm—Google's proprietary software is the key to the company's successful distributed-computing model. After purchase, every system in Google's server farm is optimized and connected to the network via software designed specifically to run the company's search architecture

as efficiently as possible.

Don't expect to drop by your local branch and take a tour of the server farms anytime soon, either. Aside from saying that Google servers are spread liberally around the world, our inside source refused to tell us where any of the clandestine installations are located. He also told us these installations are housed in state-of-the-art facilities using highly sophisticated custom cooling solutions. "Our data centers are as big as they get," he explained, "but most companies are secretive about their business intelligence and obviously so are we." That these machines are hidden around the globe not only aids performance, but also avoids risk. Should the east or west coast experience a massive power blackout or some other catastrophic event, Google will still be there for the rest of the world.

Four Steps for Google . . .

Inexpensive hardware is merely the outer casing of Google's real magic. The search engine's inner workings are the brainchild of Sergey Brin and Lawrence Page, who co-founded Google in 1998. In the course of their doctorate programs at Stanford, the two computer scientists developed a highly scalable search solution at a time when other sites' search results were either useful or complete, but not very timely.

Determined to pair quantity with quality and timeliness, Brin and Page devised an ingenious approach that broke web searching into four key components: crawling, indexing, ranking, and results.

To pore over the 10 billion web pages on the Internet, Brin and Page developed an innovative and futuristic web crawler called the Googlebot. The Googlebot, which is actually many thousands of bots running in parallel, visits web pages in much the same way we do. It specifically checks to make sure each page is still valid, "reads" the current version of the page, and visits all the links that appear on the page. Because Google strives to offer the newest and most relevant data to its users, regularly updated sites

Google by the Numbers

Average number of servers: 10,000

Operating system: Red Hat Linux

Company headquarters: Santa Clara, California

Number of employees: About 1,000

Average query time: Less than half a second

Number of queries Alta Vista handled per day in 1997: 20 million

Number of Google searches per day in 1998: 10,000

Current number of Google searches per day: More than 200 million

Peak time: Between 6:00 am and noon Pacific Time

Total web pages indexed by the original Google prototype: 24 million

Current number of web pages searched daily: More than 4 billion

Number of native language versions: 89 and growing

like news sites and blogs get crawled more often. This essentially means that the more frequently a page is updated, the more frequently it gets crawled by Googlebots, and the more likely it is to appear higher up in the search results.

Before any page can become a search result, however, Google must index all the information the page contains. If a page contains the word "CPU", then Google will add a link to this page in its comprehensive index of all sites that mention "CPU". As you might imagine, indexing is extremely processor-intensive because every word that appears on your web page gets added to a gargantuan petabyte-sized Google index. (One petabyte is one million gigabytes.) Hence the gianti-normous server configuration.

Interestingly, while the indexer performs this process, it not only converts each word on a page into a list of "hits," it also takes note of font size and the use of bold and underline effects. Larger text and underlined fonts are deemed more important. A copy of the actual page is then saved in a doc server repository, and the page is given a unique DocID that helps the index quickly retrieve this web page and generate the snippet description that is your search result (See diagram on the opposite page.)

Finally, a URL Resolver scans each page and takes special note of each link. Google stores the link, the URL the link points to, and the page the link was on. Then it generates a database of links that's used by Google's remarkably democratic PageRank technology to determine relative importance. From there the data gets dumped into a large collection area known as "barrels" that are accessed by the actual search

server. To ensure that the storing and retrieving of these bits of information is lightning fast, data is compressed and decompressed as it moves along.

When you consider that the average web page has more than one thousand words, building an up-to-date index with both the terms and links to the relevant pages on the web is easily the most storage- and processor-intensive activity a search engine must do. This is why the Google architecture was designed to scale—instead of a single indexing machine churning through an ever expanding index queue, many slower indexing machines run in parallel to churn through the queue faster than any single machine could. As the number of web pages grows, Google simply throws more cheap PCs into the mix; the number of bots and indexers grows right along with the Internet.

The Power of PageRank

The secret to delivering incredible search results lies in a proprietary technology Google calls PageRank. PageRank is a score composed of several different desirability measurements. One such measurement is based on the concept of a random surfer who follows trails of links from page to page. An algorithm devised by Brin and Page calculates the probability that "random visitor X" will be enticed into clicking certain links, thereby raising the PageRank of a page likely to be clicked, and lowering the score of a page that's statistically unlikely to be clicked.

Another measurement takes into account the number of sites pointing to a specific URL. This means that a page linked to by multiple sites is given a higher score than pages with just a few links.

Yet another PageRank measurement considers the caliber of sites that point to a URL. For example, a single link from Yahoo News to your site is worth more than several links from smaller sites. Either way, PageRank will increase your site's overall score, but because Yahoo News is a big site that is itself linked to by lots of other sites, PageRank gives a higher value-ranking to a link from it.

All these factors get rolled into the PageRank system and then passed through one more anchor filter that examines font size and link proximity. The result is a numerical ranking that's amazingly accurate. Also, because Google combs through and catalogues every link on a page, it can capture information in non-HTML formats, such as links to PowerPoint presentations or PDFs. This is why Google results are often more than simple HTML web pages. It's all in the name of giving users access to the very best information regardless of the format.

Deconstructing Search

So how does all this translate into useful results every time you enter a search query into the Google home page?

While Google may seem like an ATM that dispenses answers only after you type in a request, the search engine is actually working behind the scenes long before and even after you type in your query. URLs are continuously located and added to the master list that Googlebots dutifully crawl each day. Words are continually located and added to the massive index. Web pages, PDFs, and images are repeatedly cached and catalogued in the doc server. Day after day, as the web continues its exponential growth, Google maintains its Internet vigilance.

When you fire off a search, it's the raw power of PageRank that allows the server to quickly comb the index and concoct a custom list of answers that best fit your query. These answers are then quickly paired with summary snippets clipped from the cached document copy, which explains why a summary occasionally references a lead item that's a few days older than the live page itself. If you update your site minutes after the Googlebot has crawled by, a snippet of the last known version is what shows up in the summary, even though the actual rank of your site in the results is based on its PageRank score. Remember, PageRank is primarily based on the number and quality of sites linking to your site.

Here's a real-world example: If 1,000

Google Labs' Search for the Next Big Thing

If Google the search engine was built around the concept of constant scalability then Google the company is built around the concept of constant innovation. Since day one, the company has been obsessed with drumming up new ways to make finding information online easier and easier.

The best place to keep tabs on the latest developments is Google Labs. Bookmark this URL and you won't go wrong: <http://labs.google.com>. Google is serious about listening to the feedback of the technical com-

munity that samples the new ideas presented there. As the site puts it: "Google engineers and researchers kept looking for a way to show off their pet projects. This seemed like a great way for them to get feedback without forcing every new feature on all of Google's users. So, please, send them a note and let them know if the technology is useful or not. And be frank. It doesn't help anyone if a bad idea is encouraged to spread like a noxious weed."

Amen!

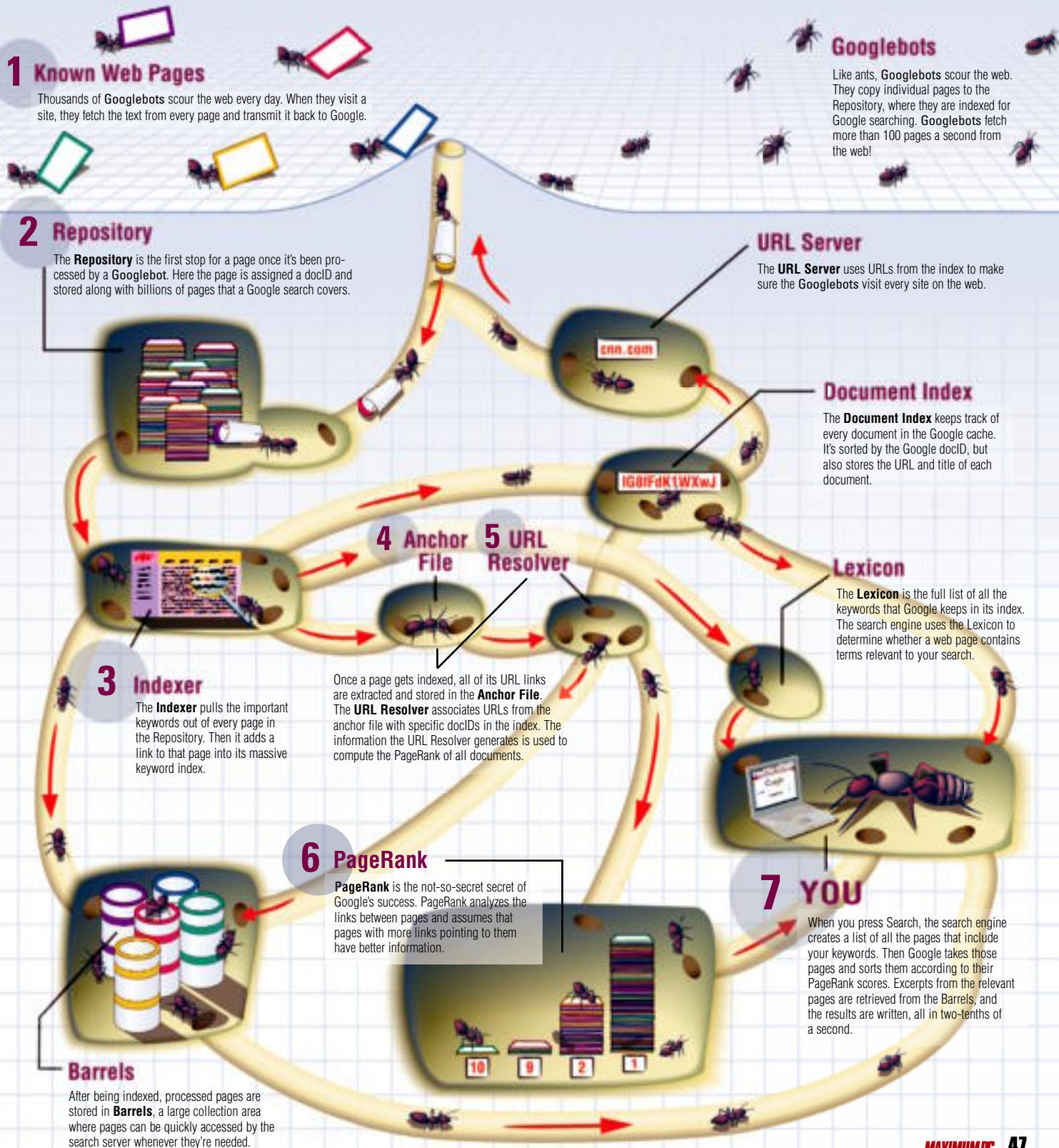
continued on page 48

GOOGLE BELOW THE SURFACE

Speed, Precision, PageRank

Like tiny ants bringing food to their queen, thousands of Googlebots scour every corner of the web so that the search engine can rapidly deliver accurate results to you. What makes Google different from a simple

index of pages? How can Google search billions of web pages and determine accurate results for any query in two-tenths of a second? Much like an anthill, many smaller processes work together to tremendous effect.



sites suddenly added links to your web page, your PageRank score would change even though Google hasn't registered a change to your site in its cache. This means that your web page's PageRank is more dependent upon other sites' content than your own. Similarly, if those thousand sites are all tiny blogs, your PageRank might not change as much had you received a single link from another site with a high ranking, like CNN. This guarantees the most relevant as well as the freshest possible content at any given time, while the summary gives you a preview of each search result.

'Miserable Failure' and Other Pranks

Cracking PageRank is a pastime for hackers as well as those interested in web traffic and/or making money without paying for advertising. The underground term "Google bomb" refers to the rigged results that occur when thousands of webmasters all agree to link to one site, image, or file in relation to a term to make a point. For example, a left-wing political group of bloggers linked George W. Bush to the term "miserable failure" by including the term "miserable failure" on their sites with a link to Whitehouse.gov or pages about George Bush. Because PageRank counts links to a similar term as "votes," it is possible to stuff the ballot box—if a large enough group decides to include the same term and link on multiple web sites.

Similarly, the Church of Scientology was accused of Google bombing when it created a network of sites that all interlinked terms, elevating its PageRank score whenever the word "scientology" was searched for. Anti-Scientology groups quickly retaliated with loads of links to negative sites. Interestingly, Google claims that both results are valid and in many ways are truly democratic because someone searching for "Scientology" would see a selection of information both pro and con.

Even more interesting, Google sees itself as combining the best of two worlds: freshly indexed and ranked democratic results on one side, and paid advertisements that helpfully connect the buyer to related online wares on the other.

No matter how you slice it, however, PageRank, with its instantaneous, accurate results, gives Google an unparalleled level of Internet credibility. It also provides the power for what is clearly the world's best search engine. ■

The 5 Greatest Google Bombs of All Time

The term and practice of Google bombing was started by blogger Adam Mathes as a high-tech prank on his friend Andy Pressman. Mathes urged scores of people to put the following line of HTML code on their blogs and web sites:

Andy `<a href="http://www.ohmessylife.com">"talentless hack"</a>`Pressman. As a result, Andy Pressman came up as the lead result whenever the term "talentless hack" was searched. Google has since tweaked the algorithm to remove poor Pressman, but here are some other classic bombs:

Weapons of Mass Destruction

Links to a special 404 error page that reads "cannot find weapons of mass destruction" (www.coxar.pwp.blueyonder.co.uk/).

Unelectable

Brings you the biography of George W. Bush.

French Military Victories

Hit the "I'm Feeling lucky" button to see it ask "Did you Mean French Military Defeats?"

More Evil than Satan

Search to bring up Microsoft's web site.

Miserable Failure

Originally the term conjured up just George W. Bush, but subsequent counter bombs have it also resulting in Michael Moore, Jimmy Carter, and Hillary Clinton.

How To Search Better

...And other frequently asked questions

Is there an easy way to refine Google search results without having to become a Boolean master?

It's all about the quotes. Putting "Bill Gates" in quotes tells Google you mean business. That's the fastest way to narrow a search down to a very specific phrase or spelling. Conversely, using a minus symbol in front of a word will exclude it from a query. Like "-Macintosh." For more on the art of search refinement, try: www.google.com/help/faq.html#narrow.

How can I find out who is linking to my site, since PageRank uses that info to rank my web site?

Easy. Type in LINK: WWW.YOURURLHERE.COM and Google will show you who is pointing to your web site. As an example, link:www.maximumpc.com will show you who's linking to the best tech magazine in the universe.

I recently went to France and when I fired up my laptop and did a Google search, the results were in French. What gives?

Google is definitely smarter than the average bear when it comes to anticipating your search needs. It saw your connection was French and automatically changed countries for you. To truly go global, try setting up your own language preferences at www.google.com/preferences?hl=en. Go to www.google.com/language_tools?hl=en to see other language sites Google has around the globe.

Can I really make cash hosting Google ads on my web site?

Depends on your overall site traffic and one very important other item—the click-worthiness of your audience. Google ads are based on a CPC, or cost-per-click, basis. For more information, try: <http://www.google.com/adsense/faq#payments1>



Faster Than a

Who makes the fastest laptop in the world? We tested more than 50 pounds of souped-up notebook fury to find out!

BY GORDON MAH UNG



**notebooks in this photo are not to scale*

Speeding Bullet!

When it comes to laptops, large displays are nice and keyboard ergonomics are splendid, but speed is our very best friend. So this month, we set out to answer one simple, burning question. Who makes the fastest notebook in town?

With this in mind, we asked six leading notebook vendors to send us the meanest, most

powerful, most ass-kicking notebooks they make. In response, we received an amazing assortment of stupid-big machines. More than 50 pounds of magnesium, plastic, silicon, and LCD, in fact. From super-widescreens to 3D displays, P4 Extremes to an Athlon 64, ATI to nVidia graphics, one startling fact became readily apparent: Today's high-end

notebooks are edging closer and closer to desktop power levels. Every year, mobile computing makes gigantic leaps in size, power, and design.

Also apparent: Dell's XPS laptop is the fastest of the fast, the strongest of the strong, the crème de la crème. But more on that later. Let's start rounding up these laptops!

Toshiba Satellite P25-S609

Short on gaming performance, a mobile Media Center makes this notebook versatile

Living proof that size doesn't always matter, Toshiba's Satellite P25-S609 is a gargantuan laptop that's lacking in power.

Slightly updated from last year's P25-S607, Toshiba's new model suffers from the same inferior graphics and RAM that plagued its sluggish predecessor. Instead of using DDR400, Toshiba opted for DDR266. Tsk, tsk. Similarly disappointing is the presence of nVidia's GeForce FX Go 5200, which is barely adequate for running today's games. And while we dig the inclusion of a DVD burner, one that burns DVD-Rs at 1x is practically useless. Granted, you can burn DVD-RAM at 2x, but that's about as valuable as being able to read BetaMax tapes.

In its defense, Toshiba isn't pitching the Satellite as the ultimate power notebook, but rather as a portable do-everything PC. In fact, it's the only notebook here that's not loaded with Windows XP Pro or Home. Instead, the Satellite uses Windows XP

Media Center Edition 2004, and comes with a TV tuner that can be swapped with either the battery or optical drive. Unfortunately, instead of using the integrated IrDA port, the remote control is powered via a clunky USB receiver. That's too bad, because it mars the notebook's portability.

The TV tuner and monstrous 17-inch screen—easily the largest display in this roundup—almost allow this oversize laptop to side-step its lackluster gaming performance. It also helps that, because of its dual-channel RAM, the Satellite turns in decent performance in applications, running four to seven percent faster than the ABS notebook in this roundup bearing the same CPU, hard drive, and RAM capacity. In fact, in our *Premiere Pro* tests, the Toshiba comes scarily close to Alienware's Area 51M, which has a 200MHz speed advantage and 2MB of L3 cache.

The application performance doesn't make up for the gaming performance, but at least you know you're set for any heavy-duty spreadsheet work. With a real graphics processor, the P25 could one day be a contender. As is, it doesn't even place in the top three.



With its 17-inch screen and built-in Media Center, the Satellite makes for a great dorm room TV. Too bad it's so slow.

MAXIMUM PC VERDICT 7

+ JUPITER

Good application performance, beautiful 17-inch display, and solid feel.

- URANUS

Lackluster gaming performance almost makes it illegal to call this a "multimedia" computer.

\$2,800, www.toshiba.com

Sharp Actius RD3D

The world's first notebook with a 3D screen—no glasses required!

The only 3D notebook in the world, Sharp's Actius RD3D truly resides in a class by itself. And by 3D, we don't mean



By hooking into D3D or OpenGL games, the Actius turns any 3D game into a screen-popping, nausea-inducing multidimensional experience.

first-person shooters. We mean the third dimension, the z axis. As in objects that seem to jump toward you from off the screen and dance above the keyboard. Even more amazing, you don't have to don some geeky shutter glasses to see these 3D effects—all you have to do is press a button to enable 3D mode. Sharp accomplishes this seemingly magical feat by using a parallax barrier inside the screen that separates the light paths from the display into two parts. Instead of light arriving at both eyeballs at once, this technology pumps separate images to each eye, thereby creating the illusion of depth. The drivers for the Actius hook into Direct3D and OpenGL games, transforming any game into a 3D smorgasbord. In reality, however, the effects work better with some games than with others.

We have to admit, we originally thought this to be the wackiest feature we'd ever seen, but after playing with the Actius RD3D, we appreciate its potential. For now, however, the 3D is a bit limited. Move your head out of what is a fairly small "sweet spot"—the physical space where the stereoscopic light paths converge on your eyes—and you see nothing but headache-inducing gobbledygook.

Sadly, our excitement over the Actius begins and ends at its screen technology. Inexplicably, Sharp chose to pair this fancy new technology with outdated parts: The included GeForce4 Go 440 doesn't have enough pep to run half the new games coming out. Sharp also cheated out by using a 533MHz-bus non-Hyper-Threaded Pentium 4 instead of an 800MHz-bus chip. The final nail in the coffin: a 4,200rpm hard drive. In a notebook this big we just don't understand the selection of such a slow drive, and apparently Sharp didn't either. In this six notebook roundup, the Actius was firmly DAL—dead-ass last—in almost every benchmark. Why Sharp didn't showcase such an interesting new technology with a little more muscle under the hood is beyond us.

MAXIMUM PC VERDICT 5

+ R2D2

Amazing 3D screen.

- R5-D4

Road-kill graphics, second-rate Pentium 4, and third-rate hard drive.

\$3,000, www.sharpsystems.com

ABS Mayhem G1

ABS presents a solid performer for a remarkably low price

When we think of PC notebooks, we think of Dell, Hewlett-Packard, and Toshiba—not ABS. Short for “Always Better Service,” the company, previously



If this were a bang-for-the-buck contest, the Mayhem G1 would win.

known for its powerful, budget-priced desktop systems, appears to be taking a similarly frugal tack with its notebooks. The Mayhem G1 is the least expensive notebook in this roundup, and amazingly, it's not the slowest, thanks to the 128MB Mobility Radeon 9600 graphics. The fat-tened-up Radeon feeds the Mayhem G1 enough juice to turn in decent gaming performance. In apps, unfortunately, it's a different story. Here the single memory channel SiS chipset drags down performance enough to place the G1 behind the Toshiba Satellite, which uses the same clocked processor, hard drive, and 1GB of RAM.

ABS could stand to improve on the G1's silver paint job, which looked a little cheap and frayed. We'd also like to see a faster DVD burner. Much like the burner in the Toshiba Satellite, the G1's 1x DVD-R/RW drive is nearly useless. We're not even sure you could burn a DVD-R at 1x while running off the battery because it probably

wouldn't last long enough.

Speaking of battery life, we didn't expect stellar or even good battery performance from any of the notebooks we reviewed—it's the price you pay for this much power—but it's worth noting that only Sharp's 3D Actius exhibited worse battery life than the G1, which could only play about 1:20 minutes of our DVD movie before giving up the ghost.

If this showdown were based on a price-to-performance ratio, the Mayhem G1 would win. However, it's not—it's based on power. And frankly, the Mayhem G1 doesn't have what it takes to successfully take on Alienware, Voodoo, or Dell. But then again, it is far more affordable.

MAXIMUM PC VERDICT **8**

+ HAVOK
Killer price and fair performance.

- GAMBIT
Could benefit from using dual-channel memory.

\$2,100, www.buyabs.com

Voodoo Envoy M:855

This fiery redhead performs solidly but gets caught mid-pack

Voodoo's sexy red notebook packs the only non-Intel silicon in this roundup, and after testing the Envoy M:855 we're suitably impressed with its “inexpensive” Athlon part (which we first saw in a Vicious PC desktop system last month). Armed with a 2.2GHz Athlon 64 3400+, the Envoy turns in competitive numbers. In our *Photoshop* test, the Voodoo was second only to Dell's butt-kicking XPS laptop (page 57) and even defeated the XPS in the math-intensive *Mathematica*. The situation flips when it comes to *Premiere Pro*, however, where the Envoy placed dead last—even behind the Sharp Actius RD3D, which limped to the finish line wheezing and spitting transistors.

Though the Envoy did well during performance testing, Voodoo finds itself in a tough position competitively. With its overclocked Mobility Radeon 9600 part, the Envoy suffers in comparison to others in this roundup. It just doesn't have the power

to pull ahead of the Area 51M's 128MB GeForce FX Go 5700 in some tests, and loses to the XPS' Radeon 9700 in others. It doesn't often happen that Voodoo—a company that prides itself on power and speed—is outgunned, but that's exactly what's happening here.

As was the case with four other notebooks in this roundup, the Envoy is equipped with a pokey 1x DVD-R/RW drive, and with that we take umbrage. Simply put: It's way too slow for 2004. Fortunately for Voodoo, there's one particularly bright spot: The Envoy M:855 turned in the longest battery life of all six notebooks. In fact, it was the only one we tested to break the two hour mark.

We were alarmed by the Envoy's inferior audio—it was the worst of all the notebooks tested. We thought it might be just our unit, but two units being reviewed by our sister magazines exhibited the same problem. Voodoo claims it's a glitch that affects only early samples and has since been corrected.

Combined with its above-average application and gaming performance and its svelte formfactor, however, this is still a solid choice for the anti-Intel crowd.



Flying the AMD flag, Voodoo's Envoy uses an Athlon 64 3400+ CPU to satisfying effect.

MAXIMUM PC VERDICT **8**

+ LOVE
Great battery life—and it's sporting 64-bit computing.

- HATE
Gimpy 1x DVD-R/RW drive and last-gen graphics card sully an otherwise attractive product.

\$3,400, www.voodoopc.com

Alienware Area 51M

Don't like your graphics card? Change it in five minutes with the Area 51M

Hark, the quest is over: The Holy Grail of mobile computing—user upgradeable graphics—has been unearthed in Alienware's Area 51M notebook! This isn't a matter of adding RAM or tricking a vendor into sending a replacement graphics card that requires a dissection to install. Alienware lets you flip over the Area 51M, grab your screwdriver, and *voila*, you've gone from a GeForce FX 5700 to a Radeon 9700 before the commercial break in *The Simpsons* is over.

The Area 51M's goodness doesn't stop there, either. Inside the stylish metallic exoskeleton of the Area 51M is an Intel Pentium 4 Extreme Edition buzzing along at 3.2GHz. Also included are a 4x DVD+R/RW burner, Gigabit Ethernet, and wireless as you want it—be it A, B, or G, the Area 51M supports every 802.11 spec in existence. Like Dell and Voodoo, Alienware taps Hitachi's 7,200rpm hard drive for storage duties. While we were quite satisfied with the 5,400rpm Hitachi drives in the Satellite and Mayhem G1, 7,200rpm makes it that much faster.

Then there's the graphics card. In this case, Alienware sent us a notebook with an nVidia GeForce FX Go 5700 with 128MB of RAM, and promised to also send us a Mobility Radeon 9700 for swapping purposes. (We still can't get over the fact that we can run whatever graphics we want on this laptop!) Unfortunately, the Radeon didn't materialize before press time, so we're only printing the scores of the notebook with the GeForce card it initially shipped with. If you read our February issue, however (Alienware Autopsy, page 12), you already know that we found the process of upgrading the graphics chip a snap.

We would have preferred a different chipset, though. The SiS 648FX limits this notebook to single-channel DDR400. This memory-bandwidth deficit appeared to handcuff the Area 51M in our application tests. In *Premiere Pro*, for example, Toshiba's gigantic Satellite clocked in just a few seconds behind



Alienware's signature touch: The alien head on the lid lights up when it's on or charging.

the Area 51M despite the Alienware's faster Extreme Edition chip and 200MHz clock speed advantage. Conversely, this laptop's gaming performance impressed us. The Area 51M managed to beat the Dell XPS in two benchmarks: *Jedi Academy* and *3DMark2001 SE*. In other games, it even elbows the Voodoo out of the way.

Ah, but what if you dropped in a new graphics card? Alienware officials told us they've been selling \$200 upgrades to people who bought the notebook with the older-generation GeForce FX Go 5200. That's not too bad when you consider that these dollars will give an old notebook enough new juice to run games faster. How much extra life will the upgrades net? We'd guess about a year, but we're not sure, and even Alienware isn't certain, given that PCI Express is on the horizon. But one year is better than none, and we applaud a company that has finally delivered user-upgradeable graphics to laptop owners.

The Area 51M doesn't have quite enough power to outmuscle the brutish Dell XPS (reviewed on the next page),



but on the plus side, it's light enough that you can actually carry it rather than wheeling it behind you in a cart.

MAXIMUM PC VERDICT 9

+ FORMULA 409

User-interchangeable graphics, 3.2GHz Extreme Edition Pentium 4.

- FORMULA 51

Only supports single-channel RAM.

\$3,800, www.alienware.com

Dell XPS

Shaped like a Mack truck, the XPS also hits like one. This laptop leaves the competition in the dust!

Dell with a 'tude? Yup. After years of getting its face rubbed in the dirt by upstarts Alienware and Voodoo, the slumbering giant appears to have finally awoken. While Dell hasn't beaten off the competition in the land of desktops, the PC maker pulls no punches with its new XPS laptop. It's, quite simply, the fastest notebook we've ever seen.

Dell has crammed every top-end component into the XPS. Fastest processor? Check. The XPS has a 3.4GHz Pentium 4 Extreme Edition. Dual-channel DDR400? Check. 4x DVD burner? Check. Brand-spanking-new ATI Mobility Radeon 9700 graphics chip with 128MB frame buffer? Got it—and before the competition did. How about the hard drive? No less than Hitachi's new 60GB 7,200rpm hard drive. What about wireless? Yes, sir. Dell included every flavor known to man, and then added a Bluetooth transceiver and IrDA to boot. We've heard rumors that a CB radio license could be required to operate all the XPS' wireless transmissions at once!

"It's like a flat Shuttle box," one *Maximum PC* editor gushed while watching us play Ubisoft's system-taxing *Far Cry* demo. Indeed it is—this is truly desktop-level performance in a notebook. Dig the comparison: The XPS was actually faster than the Transformer-esque iBuypower desktop system (page 72) in *MusicMatch*, *Premiere Pro*, and *Photoshop 7.01* benchmarks. In fact, only one machine has performed faster in these three tests: the 3.4GHz Pentium 4 Extreme Edition reference machine we built ourselves in March to benchmark the 3.4GHz P4 EE chip. That reference machine used a 250GB 7,200rpm Western Digital hard drive and an 875P chipset with low-latency Corsair Micro RAM. This means that, technically-speaking, the XPS is the fastest production machine we've ever tested in *Photoshop*, *Premiere Pro* and *MusicMatch*. Period.

In gaming performance, the XPS loses

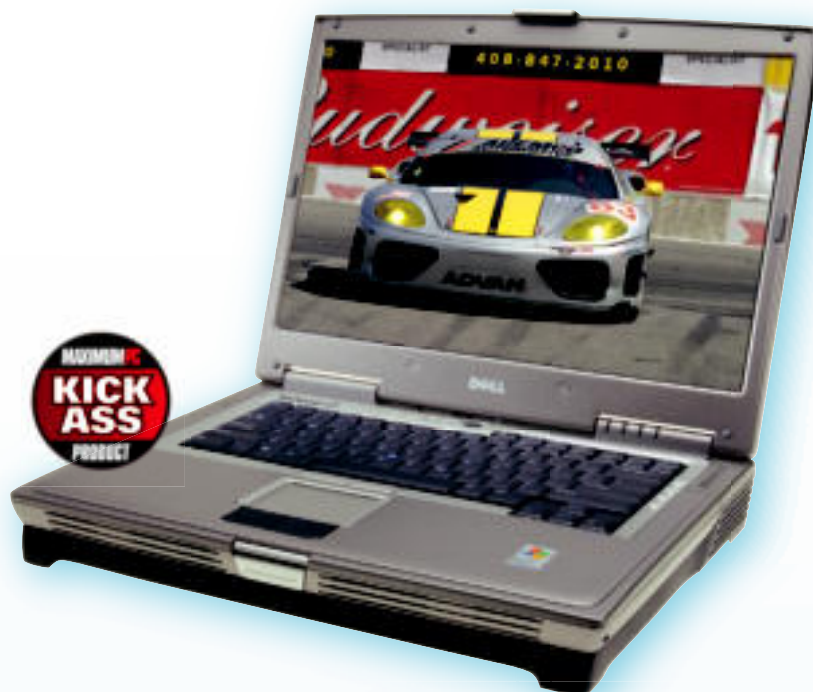


The XPS looks like someone glued a docking port to it, but who says looks are everything?

only two categories—*3DMark 2001 SE* and *Jedi Academy*—to the nVidia-equipped Alienware Area 51M, which is no slouch itself. In modern games, however, the XPS shines like the sun. In tests that stress various levels of DirectX pixel-shading capabilities, the XPS was unbeatable in *Halo*, *AquaMark 3*, and *3DMark 2003*.

Of course, while notebook graphics offer 10 times the performance they did a few years ago, they still don't come close to the performance of desktop graphics. This is what makes Alienware's GPU user-upgrades such an attractive option. Well, Dell also offers a solution. At your request, the company will send a technician to your home to upgrade your XPS for you, for a price of \$400. Ouch.

So what's not to like about the XPS? One, it's expensive. And two, it's as fat as a New York City phone book. In fact, if you look at the picture above and think the XPS is attached to a docking station, know that it's not; it simply looks like a docking station has been welded to the bottom. But bitching about size in a performance roundup would be akin to com-



plaining about battery life; these days, you just can't get performance without sacrificing one, the other, or both.

If you want the fastest laptop in town, Dell's XPS is the only answer.

MAXIMUM PC VERDICT 10

+ SUREFIRE

No-compromise performance that's faster than most desktops.

- MAGLITE

Just a little lighter and smaller than the anchor for the USS Enterprise.

\$4,100, www.dell.com

How We Test Laptops

For our tests, we didn't reach for the standard suite we use to measure notebook performance. Instead, we tapped benchmarks we normally use to test desktop systems. After all, if these desktop replacement notebooks are truly powerful, they should be able to run these tests, right? For applications, we used *Photoshop 7.0*, *Premiere Pro*, and *MusicMatch*. We also included *Mathematica 5*, which debuted in our December three-way between the P4, Athlon 64 FX, and G5. (Because the *Mathematica 5* benchmark is floating-point intensive, the Athlon 64 FX-51

kicked the tar out of both the P4 and Apple G5 in that test.) To test system bandwidth, we included *SiSoft Sandra 2004's* synthetic benchmark as well. For battery tests, we used our standard DVD rundown—the three-hour director's cut of *JFK*—to test each notebook's staying power.

We did back off a notch in our gaming tests, though, as even these notebooks can't hold a flame to a GeForce FX 5950 Ultra or Radeon 9800XT desktop GPU. We ran *Halo* and *Jedi Academy* at 1024x768 instead of the 1280x1024 resolution we use to test

desktops. And we must note that there was a slight hitch with the Area 51M's GeForce FX card that required us to update to the latest version of *Halo*. Our desktop tests run with the 1.02 version, but we used the 1.031 version this time around. For synthetic gaming performance, we used the 2001 and 2003 versions of *3DMark*. Adding yet another DX9 test, *AquaMark 3* was introduced to the mix. Finally, we also ran old stand-by *HD Tach* as a way to measure the performance of the notebooks' hard drives.

MAKE	TOSHIBA	SHARP	ABS PC	ALIENWARE	DELL	VOODOO
Model	Satellite P25-S609	Actius RD3D	Mayhem G1	Area 51M	XPS	Envy M:855
CPU	3GHz P4C HT	2.8GHz P4B	3GHz P4C HT	3.2GHz P4EE HT	3.4GHz P4EE HT	2.2GHz Athlon 64 3400+
Chipset	Intel 865	SiS 648	SiS 648FX	SiS 648FX	Intel 865	VIA K8T800
RAM	1GB DDR266 dual channel	512MB DDR266 single channel	1GB DDR333 single channel	1GB DDR400 single channel	1GB DDR400 dual channel	1GB DDR400 single channel
Graphics chip	GeForce FX Go 5200 64MB	GeForce4 Go 440 64MB	Mobility Radeon 9600 128MB	GeForce FX Go 5700 128MB	Mobility Radeon 9700 128MB	Mobility Radeon 9600 128MB
Graphics speed	200MHz core / 202MHz RAM	200MHz core / 202MHz RAM	351MHz core / 202MHz RAM	350MHz core / 200MHz RAM	445MHz core / 263MHz	366MHz core / 240MHz RAM
Hard drive	80GB Hitachi 5K80 5,400rpm 8MB buffer	60GB Fujitsu MHT2060AT 4,200rpm 8MB buffer	80GB Hitachi 5K80 5,400rpm 8MB buffer	60GB Hitachi 7K60 Travelstar 7,200rpm 8MB buffer	60GB Hitachi 7K60 Travelstar 7,200rpm 8MB buffer	60GB Hitachi 7K60 Travelstar 7,200rpm 8MB buffer
Optical	2x DVD-RAM, 1x DVD-R/RW, 16x CD-R Matshita DVD-RAM UJ-811	2x DVD-RAM, 1x DVD-R/RW, 16x CD-R Matshita DVD-RAM UJ-811	2x DVD-RAM, 1x DVD-R/RW, 16x CD-R Matshita DVD-RAM UJ-811	4x DVD+R, 2.4x DVD+RW, 16x CD-R, QSI SDW-041	4x DVD+R, 2.4x DVD+RW, GCA-4040N	2x DVD-RAM, 1x DVD-R/RW, 16x CD-R Matshita DVD-RAM UJ-811
Screen size	17-inch	15-inch	15.5-inch	15.5-inch	15.5-inch	15-inch
Screen resolution	1440x900	1024x768	1280x800	1680x1050	1920x1200	1400x1050
I/O ports	Four HS USB 2.0, 4-pin FireWire A, IrDA	Four HS USB 2.0, 4-pin FireWire A	Three HS USB 2.0, 4-pin FireWire A, IrDA	Three HS USB 2.0, 4-pin FireWire A, IrDA	Three HS USB 2.0, 4-pin FireWire A, IrDA	Four HS USB 2.0, 4-pin FireWire A, IrDA
PC card	Two CardBus	One CardBus	One CardBus	One CardBus	One CardBus	One Card Bus
Other	VGA out, parallel, TV out, headphone, mic, line in, modem	VGA out, TV out, headphone, mic, modem, floppy, CF, Memory Stick, Smart Media, SD slots	VGA out, TV out, parallel, SD slot, modem	VGA out, parallel, SD, Memory Stick, modem, mic, line out/SPDIF, TV out, dual infrared, remote, custom backpack	VGA out, DVI out, TV out, modem, mic, headphone, Bluetooth	VGA out, TV out, parallel, line out, mic, Memory Stick, Smart Media, SD, custom backpack
Networking	RealTek RTL8139 Fast Ethernet, Wi-Fi A/B/G	SiS900 PCI Fast Ethernet	SiS900 PCI Fast Ethernet, Wi-Fi B/G	RealTek RTL8169 Gigabit Ethernet, Wi-Fi A/B/G	Dell/Broadcom 570X Gigabit Ethernet, Wi-Fi A/B/G	VIA Fast Ethernet, Wi-Fi B/G
Weight*	9.9 lbs.	10 lbs.	7.9 lbs.	8.9 lbs.	9.4 lbs.	8.5 lbs.
Price	\$2,800	\$3,000	\$2,100	\$3,800	\$4,130	\$3,400
Prelim verdict	7	5	8	9 Kick Ass	10 Kick Ass	8

*Weights do not include power brick

And the winner is— Dell's XPS

You don't have to look far to find which notebook performed the fastest in this roundup. Dell's XPS mopped up the floor with the competition in just about every application test and most gaming tests.

Even more impressively, in the applications tests, this juggernaut won by a lot more than the tight 3 to 4 percent margins we typically see in the lab. In *Photoshop*, for example, it ran 47 percent faster than Sharp's Actius, 20 percent faster than the ABS Mayhem G1, and 10 percent faster than Alienware's Area 51M. In *Premiere Pro*, it put up numbers that were 14 percent faster than the Area 51M and 19 percent faster than the Sharp. Mind you, this isn't some one-sided contest in which the competition was packing Celeron or Pentium III CPUs. This was a battle between a 2.8GHz, 3GHz Pentium 4, and even one Extreme Edition chip. The XPS even beat a fully loaded desktop machine we reviewed this month!

Of all the contenders, only the Alienware Area 51M managed to clip the XPS in more than one test. In *Jedi Academy* and *3DMark2001 SE*, the Area 51M's GeForce FX 5700 emerged victorious. For its part, Voodoo's Envy M:855 managed to sail past all five P4 notebooks in *Mathematica*, thanks to the stellar floating-point performance of the Athlon 64 3400+ processor.



While the XPS easily outguns both the Area 51M and Envy M:855, it's important to note that the latter two notebooks are far more portable than the anchor-like XPS. If you're willing to compromise a little performance for a computer you can actually carry, you should probably consider the more practical Alienware or Voodoo laptops.

In the end, we have no reservations declaring the XPS both the winner of this roundup and the fastest laptop we've ever seen. Technically, it's a little too big to be considered a notebook, and at \$4,130, it's freaking expensive, but Dell has spared no expense and cut no corners in creating the ultimate power-user notebook. ■

GAMING PERFORMANCE	TOSHIBA	SHARP	ABS PC	ALIENWARE	DELL	VOODOO
3DMark 2001 SE (fps)	7090	1214	9144	12677	12416	11132
3DMark 2003 (fps)	954	84	2551	3033	3378	2990
AquaMark 3 (fps)	6993	3101	21476	22299	27666	23609
Jedi Academy 10x7 (fps)	25.9	18.4	36.3	54.6	46.3	40.1
Halo 1.31 10x7 (fps)	7.73	WNR	20.88	25.46	28.78	24.2
APPLICATIONS						
Photoshop 7.0.1 (sec)	330	534	349	308	278	297
Premiere Pro (sec)	628	765	666	625	536	773
Mathematica (sec)	753.2	849.8	809.6	714.2	613.9	571.6
MusicMatch (sec)	264	286	274	255	227	278
SiSoft Sandra 2004 Composite RAM MB/s	3766	1952	2352	2904	4315	2284
HD Tach AVG KB/s	28,573	19,270	29,227	29,975	29,310	30,389
Battery-life DVD playback (minutes)	112	72	80	98	87	138

*Best scores are bolded.

Ask the Doctor

Symptom ► Diagnosis ► Cure

YOU USED WHAT WHERE?!

I recently built a wicked system but was experiencing random shutdowns, so I checked and found that I'd forgotten to apply thermal paste between the processor and the heatsink. My problem is, there aren't any local stores that carry thermal paste where I live. My father has a ton of welding equipment, and because I was desperate, I used soldering paste instead and it solved the problem! My computer now runs fine and I no longer experience the random shutdowns.

I'm wondering if I can continue with things the way they are, or if I should order some thermal paste through the mail and reseat my CPU and heatsink?

—LANA

As a general rule, if it's working, you don't want to mess with it. However, soldering paste may not be the best solution because it could be electrically conductive. Most of the higher-quality thermal pastes have low electrical conductivity, but high thermal conductivity. The solder paste you're using may have the opposite qualities. If the paste were to ooze out of the socket and onto the motherboard, you could short out something. If enough solder oozes onto the surface of an Athlon XP, you could short the bridges and cause odd things to occur. (Of course, the potential for oozage depends on the quantity of paste you used.) The Doctor recommends that you get a tube of real thermal paste. You can order it from most online computer stores, such as Highspeedpc.com, for less than \$10.

MEDIA CENTER + UHF RECEIVER?

I plan to build an entertainment center PC and hook it up to my satellite receiver, but the remote for my satellite receiver is UHF-based. I've seen you recommend an IR blaster for satellite receivers with IR remotes and was wondering if there's such a thing

DO SMALL FORMFACTOR PCs HAVE ENOUGH JUICE?

I have a question regarding the power supplies that come in small formfactor (SFF) machines. These days, most people recommend a 400- or 450-watt power supply for a gaming PC. How is it that most SFF PCs come with a 200- or 250-watt PSU, but are still considered adequate to power a top-of-the-line processor and videocard?

—MARK

The reason SFF makers can use "just 200-watt" power supplies is they know the machines can't be overloaded. In most SFF boxes, you can run one hard drive, one AGP videocard, one PCI card, one 3.5-inch floppy drive, and one optical drive. You're also usually limited to just two RAM slots. On the other hand, in full-blown gaming PCs, you can have as many hard drives as you want, an AGP card, two or three optical drives, four sticks of RAM, and four



Small formfactor machines can get away with using smaller power supplies because the case has a limited capacity for hardware.

or five PCI cards which can each suck down some 25-watts. Some full-size-PCs may even house more than one processor, which, obviously, consumes even more power. Vendors recommend a 400-watt PSU because they don't know what you'll add to the system. Also keep in mind that we always stress quality over quantity. A high-quality power supply of 350 watts can actually produce cleaner and more stable power than some no-name power supplies rated at 475 watts or more.

for UHF-based receivers?

—ROBERT BENTZEL

The Doctor doesn't have any concrete advice for you, Robert, but there are a couple possible solutions. First, you should check to see if your satellite receiver has a backup infrared (IR) mode. Most of the satellite receivers with radio-frequency (RF) remotes that we've encountered have had a backup IR mode that can be enabled.

If you don't have a backup IR mode, there's a strong likelihood you can use the satellite receiver's low-speed serial port to change channels. Whether this will work depends on your software. The latest version of *SnapStream* software, which is now called *Beyond TV*, is able to change channels using the serial port.

INTERNET BROWSER HIJACKED

My browser has stopped allowing me regular access to the Internet. Every time I type in an Internet address to visit a site, a search engine

called Hugesearch.net comes up instead. It has also set itself as my home page. After reading the Doctor's December 2003 column, I began to suspect that the problem might be caused by spyware. I tried to download the spyware eradication programs you recommended but, again, Hugesearch.net got in the way. Please, please tell me how to make Hugesearch.net disappear.

—SALVATORE FANALE

We received a whole lot of e-mail about Hugesearch.net this month. An easy way to get rid of it is by running *Cool Web Shredder*, but what if you can't even get to a page to download *Cool Web Shredder*? Either download the program from an uninfected computer, and then transport it to the afflicted computer on a floppy, or get the app from this month's Maximum CD. *Cool Web Shredder* is available at www.merijn.org/files/cwshredder.zip.

FORMATTING USB KEYS

I just purchased a PNY Attache 128MB USB 2.0 key drive. I

discovered that I can format the drive in one of two ways: FAT16 or FAT32. What would happen if I formatted my USB drive?

I noticed that the drive is currently formatted to FAT. Would there be any speed or storage advantages to reformatting it in FAT32? And why is NTFS not an option?

—IAN J. GINSBERG

Just as when you format a normal hard drive, the formatting process will erase all the data stored on your USB drive, but it won't do any permanent harm to the drive.

There's really no difference between FAT32 and FAT16 as far as your USB drive is concerned. FAT16 has greater compatibility, but the two versions of Windows that don't speak FAT32—Win95 and WinNT 4—also don't include USB support, so it's a wash. Formatting with FAT32 may limit your disk's Mac compatibility. NTFS isn't an option because Microsoft doesn't allow a removable device to be formatted using NTFS.

EXTERNAL VS. INTERNAL

In an article in your December 2003 issue, you stated: "We've found that external drives have a significantly shorter life span than internal drives." Can you explain what you meant by "significantly shorter life span"? Also, how does the life span of an external drive compare with that of an internal drive, and is there anything I can do to extend the life of my external drives?

—THOMAS QUAN

External hard drives are exactly the same mechanically as their internal brethren, so their life span should be the same. But often that's not the case. Think of it this way: An internal hard drive lives a life of luxury. It sits securely in its drive cage fastened down on all sides and totally sheltered from the cold, harsh realities of the real world. Its chances of getting bumped, knocked, dropped, or dunked are almost nil. On the other hand, an external drive hangs out in the middle of the combat zone known as your desktop. Plus, most external drives are not designed to be portable but are often used in that fashion. So the best way to prolong your external drive's life is to keep it out of harm's way. Don't carry it around with you or toss it into a book bag. If you treat your external drive like an internal drive and practice care and caution when handling it, it will live a long, uneventful life.

CD BURNER FIRMWARE

I recently upgraded my CD burner's firmware with a version that wasn't meant for the particular model I own. Now, whenever I try to burn a CD using *Nero*, it reports that there has been a disc speed error.

—DRAKLYNE

Most firmware routines won't install on hardware that isn't identified as the correct model. There's a good reason for that. The firmware is essentially the hardware's operating

system. Once that's gone, there's little an end user can do, other than return the drive to the manufacturer for service.

There's a trend among some optical drive fanatics to "overclock" their drives with firmware intended for other drives. Sometimes it's successful, sometimes it's not. As you've discovered, even a slight speed increase is hardly worth the risk. My condolences.

WE CONTROL THE VERTICAL AND THE HORIZONTAL

Recently I've seen some cases that allow you to mount hard drives both vertically and horizontally. Does one method put more stress or wear on a hard drive? If there's a difference, which is better for the overall health and performance of the drive?

—GARGUS

The fact is, there is no difference. You can mount hard drives vertically or horizontally, it really doesn't matter. Some cases include hard drive

IS GOOGLE'S AUTO-FILL FEATURE SAFE?

How safe is the auto-fill feature on the Google toolbar? Is there any possibility of hackers getting ahold of my personal information if I use this feature?

—BENJAMIN VILLEGAS

Google's feature is as safe as any other information stored on your computer or in any other kind of auto-fill software, including the software that's built into *Internet Explorer*. By "personal information," we assume you mean credit card numbers. If anyone you don't trust has access to your PC, or if your PC is in an insecure location, you should avoid using auto-fill for credit card info.

As a general rule, we find that auto-fill is an annoyance, especially if you have more than one address you use on a regular basis. Taking an extra three seconds to type your information into a page that asks for it is much better than finding out your new PC upgrade was accidentally sent to your old office because your auto-filler put in the wrong address.



The Google auto-fill feature is safer than most, but the Doctor really doesn't see the point of using any form auto-filling software.

bays that hold the drives vertically, while other cases include horizontal trays. Our advice is to simply go with whatever orientation works best with the internal layout of your case.

PERFORMANCE IN DIFFERING RAM CONFIGURATIONS

I'm planning to build a new system using an Abit IC7-Max3 motherboard, an Intel P4 2.6GHz processor, and 1GB of Corsair XMS PC-4000 RAM. The Abit board has four DIMM slots and I want to know if there's a performance difference when using two 512MB sticks versus four 256MB sticks? Which would be better in terms of latency, resources, and game performance?

—JOE JANNISE

You're unlikely to see any practical performance difference from running two sticks versus four sticks. Personally, the Doctor would rather have two 512MB sticks because it leaves room for additional RAM down the road. Latency isn't an issue in these DIMMs; you can buy 512MB sticks these days that have just as low a latency as the 256MB sticks.

CD BURNING BLUES

I own a Shuttle SB61G2 system and am having problems burning audio CDs with the Lite-On 48x CD-RW/DVD

combo drive. Recently, I've been having problems getting *Nero* to burn a useable CD. The drive will spin up and begin burning but it does so at a much slower rate than it used to. It also makes a lot more noise while it's spinning, and it takes about two minutes longer to finish a CD.

Worse yet, when I put the completed disc into a CD player, there's a ton of background noise on the tracks and some songs either skip or won't play at all. What is causing this behavior?

—DOMINIC ST. PIERRE

Frankly, what you're describing sounds almost like death throes. But don't give up hope yet. First, update the firmware to the latest version (see your documentation for instructions). Make sure it's the correct firmware version so you don't end up in Draklyne's shoes. If that doesn't help, try disabling *Nero's* Smart-Burn feature, which some readers have had problems with. Go to Recorder > Choose Recorder, select your drive from the window, then click the Options button, and uncheck "Smart-Burn enabled." If you continue to have problems, try using different media, preferably name-brand media recommended by your documentation.

Also, you might try updating your chipset drivers, but that solution is a long shot. ■

Here he comes to save the day! Welcome to another exciting, exhilarating installment of Ask the Doctor. As always, if your PC is ill and you need a helping hand, shoot the Doc an e-mail at doctor@maximumpc.com describing your problem in depth. This month's episode of the Doctor is brought to you by the letter M and the number 7.



How To...

■ ■ ■ A step-by-step guide to tweaking your PC Experience

IMPROVE YOUR MS Word Skills

We reveal some of the software's hidden tricks

Love it or hate it, *Word* is here to stay. As the dominant word processor, it's used by virtually everyone. But even the most prolific *Word* experts are probably only tapping into 10 or 20 percent of the program's many nifty features, so we've gathered some of our favorites here for your benefit.

BY OMEED CHANDRA

Useful keyboard shortcuts

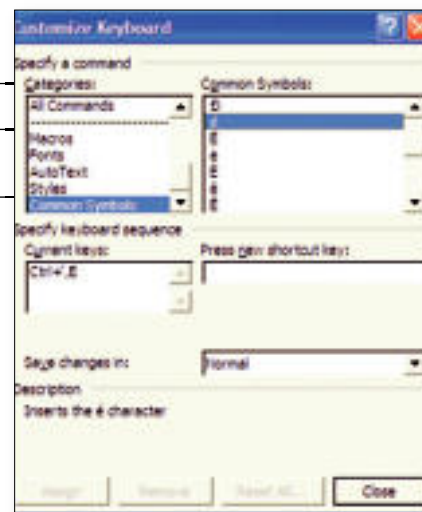
Why waste energy sliding a mouse around your desk when you can use the keyboard to perform the same tasks in a lot less time? *Word's* keyboard shortcuts will allow you to do just that. For instance, you can jump to the previous or next page in a document by holding Control and pressing Page Up or Page Down. Meanwhile, holding Control and hitting Home or End will take you to the top or bottom of the current document, respectively. Holding Shift (or both Control and Shift) and pressing the arrow keys is an easy way to highlight text in a document. You can also zoom in and out by pressing Control and sliding the mouse wheel up and down. And if you use subscript and superscript very often, you'll love this one: Press Control, Shift, and the plus sign (+) to toggle superscript, or just Control and the plus sign to toggle subscript.

Defining your own keyboard shortcuts

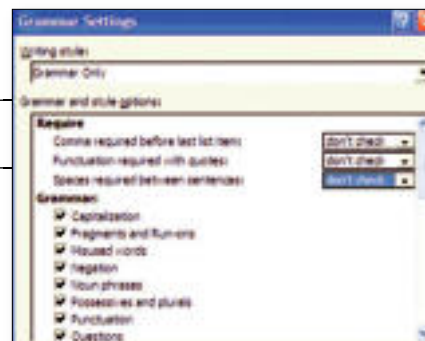
Does *Word* lack a keyboard shortcut for a function you often use? Don't worry—creating your own shortcut is easy. Click the Tools menu and select Customize, then click the Keyboard button. Find the function for which you want to create a shortcut by choosing the appropriate category and command, and then specify a keystroke sequence for the shortcut. Be sure to select whether you want the shortcut to apply to all documents or just the current document using the "Save changes in" drop-down box. Finally, click the Assign button, then close the window and return to the *Word* editing screen to test out your new shortcut! You can print out a list of all the shortcut keys you've defined by opening the File menu and clicking Print, then choosing "Key assignments" from the "Print what" drop-down box.

Customize Word to your writing style

Everyone knows how to add new words to *Word's* spell-check dictionary, but it's also possible to customize many other aspects of *Word* to fit your writing style. Open up the Tools menu and click Options, then head over to the Spelling & Grammar tab. From here, you can specify all sorts of rules and options for the spell- and grammar-check, or even completely disable them if you like. Click the Settings button and you'll find even more parameters, such as the number of spaces to require between sentences.



No one should have to use a mouse in *Word*, ever. Do you hear that? Never! Make custom keyboard shortcuts for your commonly used tasks!



You ain't seen nothin' til you 'figured them thar grammar settin's to fit yer writin' style. *Word* lets ya do purty much anything.

UPGRADE YOUR MEMORY

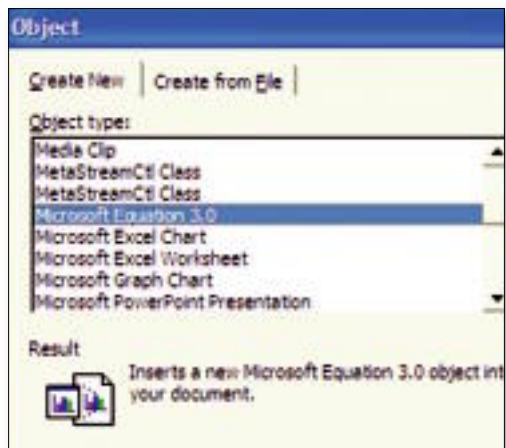
► Find out what kind of memory your PC uses. Each of the major memory manufacturers has a web utility that will determine what kind of memory you have if you provide your PC or motherboard model number. Some motherboards require you to add memory in pairs, so make sure you check the documentation that came with your board. Check Crucial.com to find memory that fits your board.

► Decide how much memory you need to add. We wouldn't run a system with less than 512MB of RAM, and even that's borderline for serious gamers. Several games are available now that will absorb one gigabyte of memory.

► Once your memory has arrived, turn off and unplug your PC. Open the case and find your memory slots. Make sure that the notch in your memory stick lines up with the key on the memory slot, then push the RAM into the slot. The white tabs on the ends of each bank should snap into place when the RAM is fully seated. Close the case, restart your PC, and enjoy your extra memory.

Basic writing and editing tips

Word is packed with all sorts of nifty time-saving tricks. For example, you can select non-consecutive blocks of text by holding down the Control key while using your mouse to highlight the text. And if you're reviewing someone else's writing, you can easily offer them feedback using the Highlight and Comment tools. To highlight text, simply select the text and then click on the Highlight button (located towards the right side of the Formatting toolbar). To add a comment to a document, open the Insert menu and select Comment. Lastly, if you ever need to spice up your writing with some mathematical equations, take advantage of *Word's* built-in equation editor. From the Insert menu, choose Object, then scroll down the list until you find Microsoft Equation (if no such option exists, you'll



Listen up, Pointdexter! You don't have to write your equations by hand anymore. Use the Equation Editor software that comes with *Word* instead.

need to install the equation editor from your setup CD). Click OK, and you'll be taken to the equation editor.

Useful menus and toolbars

Several of *Word's* most useful menus and toolbars are either disabled or crippled by default. Working on a group of documents concurrently? The Work menu is your friend. To enable it, click Tools, then Customize, then Commands, and select "Built-in Menus" from the Categories box. Scroll down the Built-in Menus box until you find the Work menu, then click and drag it onto the *Word* menu bar. (Note: From this dialog box, you can also add new buttons to your toolbars.) Now you can add documents to the Work menu to make them easily accessible by clicking Work and choosing "Add to Work Menu." This will allow you to switch back and forth more easily. Removing documents



Want to leave early? Once you've added the Work menu to your *Word* menu bar, you'll be so productive, you can leave at 3:00 every day.

is a bit more complicated—hold down Control and Alt and press the minus sign (-), then open the Work Menu and click the document you want to remove from the list. To cancel the remove command, simply press Escape.

On a related note, you can also increase or decrease the number of recent-

ly used documents listed on the File menu. Click the Tools menu and choose Options, then navigate over to the General tab and look for the "Recently used file list" setting.

If you're often forced to work within strict word limits when writing, you'll appreciate the *Word* Count toolbar. Right-click on any of the *Word* toolbars to view a list of available toolbars, and check the "Word Count" option. This will allow you to easily see how many words you've written without needing to wade through menus.

Making the most of Smart Tags

SmartTags are a gee-whiz feature included in newer versions of *Word* whereby the program recognizes certain types of text (such as an address) and offers the user context-sensitive actions to perform on that text. Try this one on for size: Open *Word* and type in an address, then hit Enter. A thin dotted line should appear underneath the address. Hold your mouse over the line and click on the circled "I" that pops up. Now choose "Display Map" from the resulting menu. Pretty nifty, eh? SmartTags have plenty of other uses, too.

You know what's great about SmartTags? They're really smart! Seriously, all you do is type an address into *Word*, click on the little SmartTag icon, and you can see a map of the location or driving directions to it!

As another example, copy some formatted text from a web page, and paste it into a *Word* document. Clicking the SmartTags Paste icon that pops up will allow you to choose whether you want to preserve the source formatting or match the current document's formatting. ■



In the Lab

A behind-the-scenes look at Maximum PC testing

Klipsch Delivers Two Towers of Power to the Lab

...and we reach a new low in speaker testing

Hidden from prying eyes and protected by keycode access and a missile defense system, the *Maximum PC* test lab is the most secretive of places. Only a handful of employees receive access to our vault-like den of hardware depravity; it's tucked away in a corner of the building not frequented by our parent company's 150-plus employees. Sure, once in awhile an errant employee steals a glance when the door swings open, but in general no one other than us is aware of the lab's goings-on.

This month, however, everyone within a 100-foot radius was aware of the fact that we were testing subwoofers. In our defense, we'll admit that when Klipsch first offered to send not one but 12 of its SWS subwoofers for testing, we should have resisted. We should have said, "We have enough bass, thank you very much." But we didn't. We're weak, obviously, and easily swayed by over-the-top PC power. Hey, who isn't?

We started by hooking up three of the subs to a set of Klipsch ProMedia Ultra 5.1 speaker set by daisy-chaining them together. One nice feature of the SWS system is that a single volume wheel

controls the output of the entire array, so it's easy to dial up the appropriate amount of bass.

"Are these subwoofers multiplying?" asked Editor-in-Chief George Jones upon finding another stack of three subs later in the week (for a total of six). Little did he know, the bug had just begun to take hold. One week later six subwoofers had become a massive 12-sub array that shook the lab—and everything around it—like a 9.0 earthquake. The level of bass felt so unbelievably powerful it was comical. For example, when standing near the subwoofers during testing our pant legs actually flapped around like flags in the wind, not because the speakers' ports were facing them (they are located on the speakers' rear) but because of the sheer strength of the sound waves!

Unfortunately, right as we went to press with our review of the SWS, Klipsch informed us of its decision to



The sensation of 12 100-watt subwoofers pounding away on either side of you is pure torture, which is why we had our new intern test it for us. Sadly, the massive bass blast drove poor John insane.

clear out its remaining stock of subs at the bargain basement price of \$99 and cease selling the product—for now, at least. Because we're not into recommending products you can't buy, this means we had to shelve our review (the verdict: a 9 rating and a Kick Ass award). This also means we have the last 12 SWS subwoofers in captivity. Send your bids to input@maximumpc.com.

Lessons from the Lab: Optimize your subwoofer placement

Conventional wisdom says it doesn't matter where you place a system's subwoofer because the deep tones it produces are nondirectional. While this is generally true, we've discovered it's still possible to get better sound from your subwoofer by experimenting with different locations. Here's how you can find the sweet spot for your bass.

Unplug every speaker in your system

except the subwoofer, and place it in the exact spot where you'll be sitting when you listen to your speakers (if you can). Play a bass-heavy soundtrack and crawl around the room, listening for where the bass sounds best. You're probably asking, "You really want me to crawl around the room?" Yes, we really do. It's a lot easier for you to move around the room than it is to

move the sub. You are looking for the spot where the subwoofer sounds the best to your ears. Once you've located the spot, place the subwoofer there! To save time, start in the far corner of the wall where your PC (or home theater) is located, and walk along the walls so that you hear how the bass sounds from both sides.

SmartBar XP



The first thing we noticed when we saw screenshots from the next version of Windows—code-named Longhorn—was the brand-new vertical Taskbar, complete with a clock, shortcuts to our favorite apps, and pretty much anything else you want to add. The current rumor is that the new Taskbar will be completely configurable. The problem is that we'll have to wait until 2006 before Longhorn is actually released.

Enter *SmartBar XP*, which lets you integrate pretty much anything you want into a customizable panel on one side of your Desktop. It includes a clock, a rudimentary MP3 player, a fully customizable RSS news reader, a news ticker, and even weather monitoring plug-ins. A system monitor tool lets you see at a glance how much RAM you have left, how large your page file is, and the amount of network traffic going across your NIC.

You can even tweak every aspect of your *SmartBar's* appearance, adjusting its size, color, and transparency. You can even re-skin it for a completely unique appearance. Download a free, beta version of *SmartBar XP* from www.smartbarxp.com. (If you get the Maximum PC CD, you're in luck—*SmartBar XP* is included.)



Best of the Best

As of April, 2004

New hardware? Forget it. At the end of last year, companies busted their guts updating designs for the first part of this year, so we're in a lull right now. This quiet period won't last much longer though. A few new products almost squeaked in this month, however. We contemplated bumping Canon's i9100 for the Epson 2200 we used in this month's Head2Head (page 20) but decided the i9100's superior speed still gives it the edge, even if the 2200 has a higher rating for archival prints. The beautiful screen in Toshiba's e805 almost bumped the iPaq, but the lack of Bluetooth helped keep HP's PDA in the top slot. Despite the lack of hardware churn, several new games made our list.

High-end videocard:

ATI Radeon 9800 XT

Budget videocard:

BFG Asylum GeForce FX 5700 Ultra

Do-everything videocard:

All-in-Wonder Radeon 9800 Pro

Soundcard:

Sound Blaster Audigy 2 ZS Platinum

Serial ATA hard drive:

Western Digital 740GD/
IBM 7K250

Parallel ATA hard drive:

Western Digital WD2500JB

CD-RW drive:

Plextor PlexWriter Premium

DVD burner:

Plextor PX-708A

LCD monitor:

Sharp LL-1820

High-end CRT monitor:

Sony F520

Budget CRT monitor:

Cornerstone P1750

P4 motherboard:

Chaintech 9CJS Zenith

Athlon XP motherboard:

Asus A7N8X Deluxe Rev 2

Portable MP3 player:

Apple iPod 40GB

Photo printer:

Canon i900

Pocket PC PDA:

HP iPaq 5450

Palm OS PDA:

Palm Tungsten C

5.1 speakers:

Logitech Z-680

4.1 speakers:

Logitech Z-560

2.1 speakers:

Logitech Z-2200

THE MAXIMUM PC PATENT OFFICE PRESENTS

Case Frodz!

This month we're proud to unveil the first product to emerge from the newly established Maximum PC Patent Office. Our brand-new Case Frodz (patent pending) line of stick-on case windows can turn your boring, plain PC into a custom-built rig! Nobody will ever know the difference!



A lot of folks have plain-jane PCs, but yearn for a custom-built rig from Voodoo, Alienware, Falcon, or the like. We feel their pain.



Every Case Frodz [trademark logo] begins as a photograph of a case window. This Case Frodz™ was made using a photo of a Voodoo PC that costs \$6,000. We take the photo, apply an adhesive backing and....



Just like that, your POS PC is transformed into an object of envy, all for the low, low price of just \$50! Call now and receive a free Water Kewler™ with purchase! Interns are standing by.

Our current gaming favorites: *Beyond good & Evil*, *Syberia 2*, *Unreal Tournament 2004 demo*, *Far Cry demo*, *Dungeon Siege*, *Legends of Aranna*, *Planetside*, *Desert Combat*

iBuyPower Gamer Extreme PC

Domo arigato, Mr. Roboto—this PC's case design stands out big time!



It's hard to ignore iBuyPower's Gamer Extreme PC, what with its ever-so-eye-catching exterior: The neon green tower, designed to mimic an anime robot (or a Transformer?!), is unique, to say the least. But the attention this case attracts may not all be positive. Opinions on the matter were decidedly mixed here at the *Maximum PC* office; some editors gave a thumbs-up to the case's flashy styling while others found it garish and unappealing.

Still, the double-takes garnered by the GE's exterior can't compare with reactions to the interior, which will

undoubtedly make onlookers gawk. Here's why: At the heart of the Gamer Extreme lies a powerful and relatively rare Pentium 4 Extreme Edition processor. We say "rare" because the P4EE has yet to be openly embraced by major system manufacturers. In fact, the Gamer Extreme is one of the first P4EE-equipped systems to roll through our lab despite the fact that Intel officially launched

the processor back in November. As you might guess, we were more than eager to put the Gamer Extreme through our rigorous tests.

Thankfully, the 3.4GHz P4EE isn't the Gamer Extreme's only high-end component—it comes loaded with an Intel 865PE-based Asus P4P800 motherboard and two 512MB modules of dual-channel Kingston PC3200 DDR RAM. A 256MB Radeon 9800XT powers the included 19-inch Viewsonic E90F monitor, while an Audigy 2 pumps impressive sound through the mid-range Logitech Z-640 5.1 speaker set.

The usual complement of optical drives are also present, though we were underwhelmed by the NEC dual-format R/RW drive; not only does it offer less than stellar CD-R burn speeds, but the tray door has been spray-painted a dull green that's at least three shades lighter than the rest of the case. Also disappointing was iBuyPower's decision to include just one hard drive. Ordinarily, we would be more than happy with the Seagate 120GB SATA, but when you consider that systems in this class usually offer twice as much storage and come equipped with two drives in a RAID array, the Gamer Extreme's lone HDD seems wimpy.

These may sound like minor



David Hasslehoff fans, your PC has arrived! Wait till you see the red oscillating LEDs on this hot rod's "hood!"

quibbles, but we've come to expect top-of-the-line hardware from gaming rigs, and the little details can make or break our assessment. Thankfully, this PC doesn't stumble when it comes to performance. Out of the box, it scored a decent 189 in the brutal *SYSMARK2004* suite and powered its way through the *MusicMatch*, *Premiere Pro*, and *Photoshop* tests with high marks all around. Given that Intel is marketing the P4EE to gamers, we were particularly interested in seeing how the Gamer Extreme would perform in our game benchmarks. After all, iBuyPower didn't name the system the Office Worker Extreme, right? In these tests, the Gamer Extreme performed admirably, scoring 37.9 and 56.2 frames per second in *Halo* and *Jedi Academy*, respectively.

In the end, the Gamer Extreme is a solid system held back by a few poor design choices, namely the inclusion of the NEC dual-format DVD +/- RW drive and the lack of hard drive storage space. The system's case is also a sticking point, although it's encouraging to know that iBuyPower is willing to show some daring in the realm of case design.

—TAE KIM

UNDER THE HOOD

THE BRAINS

CPU	Intel Pentium 4 Extreme Edition 3.4GHz
Mobo	Asus P4P800 (Intel 865PE Chipset, 800 FSB)
RAM	One GB Kingston PC3200 dual-channel DDR (two 512MB sticks)
I/O ports	Six USB, one parallel, one serial, one FireWire
LAN	3COM Gigabit LAN PCI Controller

DISPLAY

Videocard	256MB ATI Radeon 9800XT (412MHz core, 365MHz DDR)
Monitor	19 in. Viewsonic E90F (18 in. viewable)

STORAGE

Hard drive	Seagate 120GB (7,200 rpm SATA)
Optical	NEC ND-1300A dual-format DVD burner (4x DVD+R, 4x DVD-R, 16x CD-R), Artec 16x DVD-ROM drive
Other	1.44 MB floppy drive

AUDIO

Soundcard	Sound Blaster Audigy 2 OEM
Speakers	Logitech Z-640 5.1

FINE DETAILS

Case	Green NZXT Guardian case, Works Power 420-watt power supply, one blue cold cathode light
Fans/extras	Four tri-color LED case fans, LED and fan controller
Mouse	Green Mitsuko optical mouse
Keyboard	Green Mitsuko keyboard

BUNDLE

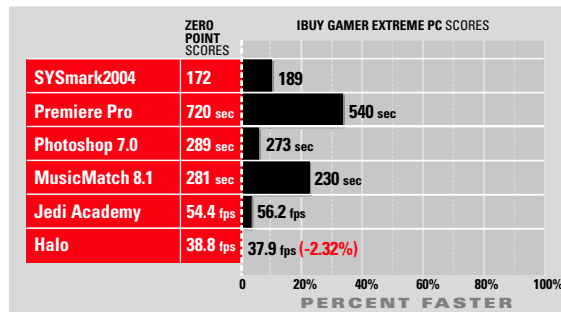
Windows XP Home, Norton Antivirus 2004

WARRANTY

One year iCare Deluxe warranty

BOOT: 40 sec.

DOWN: 18 sec.



Our zero-point system includes: a 2.2GHz Athlon 64 FX-51, an Asus SK8N motherboard, 1GB of Corsair Registered TwinX DDR400 RAM, an ATI Radeon 9800 XT, a 250GB Western Digital WD2500JB hard drive, Plextor PX-708A DVD burner and a PC Power and Cooling TurboCool 510 Deluxe power supply.

MAXIMUM PC VERDICT

8

OPTIMUS-PRIME

3.4GHz P4EE. 'Nuff said.

BUMBLEBEE

Single HDD, weak optical drive selection.

\$2,740, www.ibuypower.com

External Soundcard Skirmish

Creative Labs' Audigy 2 NX vs. Philips' Aurilium

Notebook owners must be deaf. How else to explain why manufacturers pack their laptops with top-of-the-line CPUs, tons of RAM, and fast graphics chips, but insist on craptastic audio components. Thankfully, if you want high-quality surround sound with your mobile PC and have a free high-speed USB 2.0 port, both Philips and Creative Labs promise to turn your notebook into a sweet-sounding desktop replacement.

—GORDON MAH UNG



The Aurilium supports up to 5.1-channel audio and doesn't require a power brick.

Philips Aurilium

Philips' Aurilium is a sleek-looking external sound "card" that lets you add 5.1 audio to any PC equipped with a high-speed USB 2.0 port. Amazingly, the Aurilium is completely bus-powered, which means there's no need for an external power brick. Like some other soundcards, the Aurilium promises to recognize and configure your speakers on the fly. Unlike other sound solutions we've played with, this one works. We plugged in a set of headphones and they were instantly recognized as headphones. On the downside, we detected faint static and crackling during booting. Perhaps this is the price of a bus-powered audio device?

To test sound quality, we listened to 24-bit source material using both the Aurilium and the onboard AC97 codec built into the test notebook. It reinforced what we've been

saying for years: Notebook vendors need to improve the audio quality of their laptops! When compared with the Aurilium, our onboard audio sounded like an 8-track tape. The Aurilium's 24-bit audio is easily head and shoulders above what you can find in the majority of notebooks on the market.

At 104dB, the Aurilium is spec'd higher than Creative's Audigy 2 NX (102dB), but we thought the Audigy sounded slightly fuller. In gaming performance, the Aurilium has the advantage in *3DMark2003's* sound test. In other benchmarks, both cards performed adequately. Unfortunately, Philips dropped the ball in designing the Aurilium's feature set. Not only does the card lack a remote control, it's unable to record in 24-bit audio. Also, if you have 6.1 or 7.1 speakers, take note: The Aurilium tops out at 5.1 audio.

Creative Labs Audigy 2 NX

Like the Aurilium, the Audigy 2 NX is high-speed USB 2.0-compliant and provides up to EAX 3 support, including Advanced HD. Unlike the Aurilium, it also allows you to listen to DVD-Audio.

The NX is smaller than the Aurilium but features four line-out ports: a coax and optical SPDIF, a line-in, and a mic-in. An optical SPDIF in-port is also included for mini-disc fanatics. The NX isn't bus-powered like the Aurilium, but its power brick is fairly unobtrusive. Unlike Creative Labs' Extigy model, the Audigy 2 NX isn't a stand-alone Dolby Digital decoder. All of those functions have now been moved onto the host processor, i.e., your CPU.

In terms of audio quality, the NX worked perfectly with our 7.1 GigaWorks speaker set. Using the same 24-bit audio source, we tended to favor the NX over the Aurilium—



Creative's diminutive Audigy 2 NX allows notebook owners to listen to DVD-Audio discs.

it produces a fuller sound. But frankly, the difference is negligible.

Creative doesn't push the NX as the "optimal" gaming solution, but more as a solution for casual gaming. That's good, because we did suffer a big frame rate hit in *3DMark2003* due to excessive CPU usage. In the other game tests—*Comanche 4* and *Quake III Arena*—the Audigy's frame rates held up fine.

We've long hated the difficult-to-turn volume knobs on Creative's soundcards, and the NX is no different. You can't adjust the volume without keeping your other hand on the unit to prevent it from sliding off your desk. Fortunately, an infrared remote lets you adjust the volume from afar.

Still, as much as we liked this card, it wouldn't make our notebook a satisfactory desktop replacement. Not a chance. A PCI card still offers better performance than a USB 2.0 device. *But*, if we were already using a notebook as a desktop replacement, we'd sure as heck want better sound, and the Audigy 2 NX would be our first choice.

Aurilium

MAXIMUM PC VERDICT 8

+ DVD-AUDIO
Bus powered, and the QSound 3D effects are very pleasing.

- 8-TRACK TAPE
Must reconfigure audio in order to get sound back on when the card is unplugged from a notebook.

\$100, www.pcsound.philips.com

Audigy 2 NX

MAXIMUM PC VERDICT 9

+ 7.1
Automatically reconfigures audio on your notebook when disconnected.

- 2.1
Volume knobs are difficult to use and there is no EAX 4.0 support. Sluggish frame rates.

\$130, www.creative.com

DoubleSight 15" LCD Monitor

It's worthy of a double-take, but does it warrant space on your desk?

There's no denying that the DoubleSight monitor attracts attention. With its paper-thin profile and sweeping expanse of dual-LCD action atop a slim, unobtrusive pivoting pedestal, the display draws approving looks and comments from just about every passerby. But eye-catching though it may be, we don't think this is a monitor we'd want to hang with on a regular basis.

We really wanted to like DoubleSight's "two-in-one" approach. It actually seemed perfect for our purposes. To create this magazine, we use both Macs and PCs—for *InDesign* page layout and everyday computing, respectively. By connecting both a Mac and a PC to the DoubleSight monitor, we could view displays from both computers simultaneously. The monitor also let us duplicate the display of either computer on both screens. (By default, both screens serve as a single desktop.) All these actions can be performed by simply pressing a button on the monitor's frame. There's no need to enter a software dialog box to reconfigure the displays' output.

Sounds impressive, but we were rudely awakened when we realized the DoubleSight is equipped with only VGA connectors. If we're going to spend good money on a flat-panel, we expect to find DVI support for full digital imaging free of the video noise created by analog conversion.

Furthermore, while we appreciate the monitor's relative light weight, easy assembly, and wall-mounting option, its silver-painted plastic trappings left us unimpressed. To make matters worse, you'll need a third-party solution (e.g., a phone book) to elevate the screens, which don't slide up and down. The unit does tilt forward

and back (about 20 degrees) and swivel side to side (more than 45 degrees), but because the displays comprise a single contiguous unit, any turning or tilting is applied across the board. That's right, it's impossible to adjust the angle of just a single screen, and having the two screens slightly angled in toward each other—as many dual-display owners are wont to do—is simply out of the question. A hinged mid-section would have made more sense. And it would have allowed users to adjust for the glare that appears at the far ends of the displays' plane. As it is, a 1-inch-thick divider already disrupts the displays' continuity, so why not make the split functional?

Call us spoiled, but we also think the meager 15-inch diagonal viewing area per screen throws a damper on the benefits of a dual-display setup. We felt cramped and inconvenienced whenever we worked in just one screen. But, of course, two larger screens probably would've meant a prohibitively expensive price tag.

We used *DisplayMate's* LCD tests (www.displaymate.com) to evaluate the monitors' capacity for gray-scale reproduction, and both screens performed admirably at their default Auto settings. Even at the lightest and darkest ends of the gray-scale spectrum, we were able to discern extremely minute gradations in values. But we also discovered something else when running identical content side by side: Our two monitors have distinctly different color casts—one blue, the

Two monitors sharing a single base is a beautiful thing. We just wish the single base that came with this setup was more attractive—and more functional.

other yellow. The color differences are slight, mind you, and *DisplayMate* tests are designed to reveal qualities you might not otherwise notice. But isn't the point of the DoubleSight for two monitors to act as one?! Font reproduction wasn't super crisp, but even a serifed font was easily readable at 9-point. The native resolution is 1024x768, and the pixel pitch is 0.297mm—standard specs for a 15-inch LCD.

The most obvious value of the DoubleSight monitor is that it offers two LCD screens in a sleek, compact package. But that which makes the display unique also makes it a nuisance. It's so streamlined that it sacrifices some of the practicalities that would make it truly useful. For approximately the same price we could purchase two LCDs and some much needed flexibility.

—KATHERINE STEVENSON



MAXIMUM PC VERDICT
6

+ DOUBLE SCOOP

Space-saving design, nice color and gray-scale reproduction, convenient monitor-toggling.

- DOUBLE CHIN

The lack of a hinged center presents problems with glare and restricts usability.

\$800, www.doublesight.com

DVD Burner Dogfight!

Lite-On and Memorex bust out with 8x dual-format screamers

The question is inevitable and gets asked every time we receive a new optical drive for review: "Is it faster than a Plector?"

This month, we size up two new burners from Lite-On and Memorex.

—LOGAN DECKER

Lite-On 8x Dual-Format DVD Burner

No, Lite-On's 8x DVD burner isn't faster than Plector's 8x dual-format drive. But plenty of folks will find at least one good reason—actually, one hundred good reasons—to opt for the LDW-811S instead of more expensive brands.

As far as speed goes, Lite-On comes pretty damn close to Plector's gold standard. We burned 4.25GB of data to 4x DVD+R media in 8:52 (min:sec) compared with 8:11 on the Plector. That's right—4x media. Like the Plector, Lite-On's drive can write at 8x speeds to certain 4x media (a full list is included with the documentation).

In other areas, the Lite-On came

in just shy of the Plector: 15:08 to complete a 4x DVD-R disc, a particularly impressive 14:33 to write to 4x DVD+RW media, and 30:32 for the same task on DVD-RW media.

The LDW-811S is slightly more than an inch shorter than Plector's drive, making it more practical for Shuttle cases and small formfactor multimedia PCs. But the real kicker is the drive's list price, which is a full \$100 less than the sexy Plector.

On the downside, the drive's CD access times continue to lag slightly behind Plector's, and the bundled software package, which doesn't include the latest versions of *MyDVD* and *RecordNow*, is a letdown.

Memorex True8x DVD Burner

Although Memorex' DVD burner didn't break any records in our speed tests, it did take the gold in software bundling. The True8x burner includes an application for every major disc-burning task we can imagine, including data backup, DVD copying (from unencrypted sources), disc sleeve creation, and DVD menu building. When combined with the drive's fine performance, it makes for a package that's hard to beat.

The drive's "True8x" branding led us to believe that the drive burns at 8x speed to DVDs across the entire span of the disc, so we were peeved to find out this isn't the case. The drive actually begins burning at 6x, and ratchets up to 8x at around 600MB. We were still pleased with the DVD+R speed of 9:08 (min:sec) to burn 4.25GB of data. This is almost a full minute shy of the PlexWriter's record, but only seconds slower than

THE BUNDLE

Ahead Nero Express 6
Ahead Nero Vision Express 2
Ahead Nero Showtime
Ahead Nero BackItUp
Ahead Nero InCD 4
(guest writing)
Ahead Nero Recode 2
Ahead Nero Cover Designer
PhotoShow Deluxe

Writes to:
DVD+R 8x
DVD-R 8x
CD-R 24x

Rewrites to:
DVD+RW 4x
DVD-RW 4x
CD-RW 24x

Reads:
DVD-ROM 12x
CD-ROM 40x



The hardware could use a little more speed, but Memorex' 8x burner has all the software you'll need to get started.

most of the competition. Writing to other formats produced similar results that were at most eight or nine seconds behind Lite-On's 8x dual-format burner. Three major disappointments stand out: The drive isn't able to burn at 8x speed to select 4x media (unlike drives from Plector and Lite-On); CD burning is limited to 24x (horrors); and the access times lag well behind that of other drives.

But Memorex picks up the slack with a software bundle that goes way beyond the norm, including, for example, an app that can back up a dual-layer unencrypted DVD-Video disc and compress it to fit on a single recordable DVD. That's just the tip of the iceberg on a software package that's easily the most comprehensive we've ever seen bundled with any optical drive.

THE BUNDLE

Sonic MyDVD 4.5
Sonic RecordNow 4.6
Cyberlink PowerDVD 4.0

Writes to:
DVD+R 8x
DVD-R 4x
CD-R 40x

Rewrites to:
DVD+RW 4x
DVD-RW 2x
CD-RW 24x

Reads:
DVD-ROM 12x
CD-ROM 40x



Lite-On's dual-format 8x DVD burner continues the company's hearty tradition of serving up high-quality drives for clearance-rack prices.

BENCHMARKS	DVD	CD
Average data transfer (MB/sec.)	9.3	4.5
Random/full-stroke seek (ms)	100/175	89/191*
Audio extraction (min:sec)	-	3:11
Data DVD/CD burn (min:sec)	8:52 (DVD+R)	3:31
CPU utilization	12% (2x)	5% (8x)

The data CD burn test uses the bundled applications to create a 700MB CD-R. The data DVD burn test uses the bundled applications to create a 4.25GB. The audio-extraction test uses a commercially stamped 74 minute audio CD. All tests were performed using Verbatim media, except where noted. * A mysterious conflict prevented the Lite-On LDW-811S from completing our standard access time benchmark using Ahead's CDSpeed. The result shown is from CDTech instead.

Lite-On LDW-811S

MAXIMUMPC VERDICT

9

+ DARK MATTER

Lite-On delivers another scorchingly fast drive for a great price.

- DISC SHATTER

What's up with the musty old software package?

\$180, www.liteonit.com

BENCHMARKS	DVD	CD
Average data transfer (MB/sec.)	8.6	4.6
Random/full-stroke seek (ms)	131/311	122/286
Audio extraction (min:sec)	-	3:16
Data DVD/CD burn (min:sec)	9:08 (DVD+R)	4:33
CPU utilization	15%(2x)	16%(8x)

The data CD burn test uses the bundled applications to create a 700MB CD-R. The data DVD burn test uses the bundled applications to create a 4.25GB. The audio-extraction test uses a commercially stamped 74 minute audio CD. All tests were performed using Verbatim media, except where noted.

Memorex True 8x

MAXIMUMPC VERDICT

8

+ FAST LEARNERS

Memorex delivers another reliable, competent drive with an all-you-can-eat software bundle.

- SLOW BURNERS

The drive can't write at 8x to 4x media as other drives can; access times are not so great.

\$200 (not including \$30 rebate available at press time), www.memorex.com

PC Case Clash

High-end competes against low-end, with surprising results

Like people, cars, and cheese products, PC cases come in a wide variety of shapes, sizes, and colors. But what's the difference between a top-of-the-line enclosure and a bargain basement case? You're about to find out.

—JOHN LIRA

Chenbro PC6166 Gaming Bomb

We know what you're thinking: that the Gaming Bomb looks cheap. This

was our first impression too, but looks can be deceiving. Upon closer investigation, we found the Gaming Bomb to be surprisingly, er, bomb-like.

This mid-tower case's front bezel comes in four different colors (blue, green, silver, or orange) and is easily removed via two plastic tabs on the case's interior. Although the rest of the case is made of metal, the bezel itself is made of plastic and

includes a perforated lower half with a soft filter on its interior for sifting the air that enters the case from the front. Holes are drilled for 80mm or 92mm fans, but no fan is included. A well-stocked front I/O port is included as well, with two audio jacks, two USB 2.0 ports, and a FireWire port. Overall, the front of the case is well designed and packed with useful features.

The case's side panel includes a standard locking mechanism, and the door is released by shifting a single plastic tab upward. Operating

the door is effortless, and we dig the window's subtle yet cool design. If you're into the contemporary clear look, the Gaming Bomb optionally comes configured with a transparent acrylic door.

The case's internals surprised and delighted us. The case includes seven internal drive bays: three 3.5-inch, and four 5.25-inch that are mounted with included plastic rails. Extra rails are kept secure in a holder on the floor of the case, and a cable caddy will help you keep your front I/O wires tidy. The Gaming Bomb uses an innovative screwless design for holding add-in cards in place; while it works fairly well, the plastic parts it uses feel flimsy and fragile. The case's rear includes mounting holes for a 92mm or 120mm fan, but again, no fan is included.

The Chenbro doesn't come with a power supply, but it costs just \$45, for crying out loud! Considering its rock-bottom price, this low-cost case totally exceeds our expectations. It's not just a fantastic case for the money, but a fantastic case overall.

SilverStone Nimiz

SilverStone is a high-end case manufacturer intent on building the absolute best cases in the industry, price be damned. A prime example of this philosophy is the company's warship-sounding Nimiz—an expensive case absolutely loaded with features.

The all-aluminum Nimiz is certainly pleasing to the eye. In a market dominated by bling, we're happy to see such elegance. The front bezel sports a dual-door design that uses tiny embedded magnets to keep the doors shut. The top door swings out to reveal six 5.25-inch drive bays. The lower door provides convenient access to the front fan filter and sports a push-release cover for the bay of I/O ports. FireWire, dual USB 2.0, mic, and headphone jacks are all present and accounted for. Despite the case's overall sturdy construction, we admit to feeling slightly disappointed with



The Nimiz' classy exterior provides a welcome reprieve from a market dominated by side windows, neon tubes, and laser lights.

the flimsy nature of the two case doors. Both rattled around on their hinges, and the weak magnets used to keep them closed consistently failed. When tipped to the front or side, the doors come loose and swing open. Because full-tower cases like the Nimiz aren't designed to be transported, this isn't that big a deal in a product that offers a welcome alternative to Cooler Master's Wave Master.

SilverStone bucks the side-window trend by going with a solid panel, and maintains a clean, classy look as a result. The side panel is attached via three thumbscrews, allowing it to be easily removed along with the motherboard tray. Complementing the six 5.25-inch bays are six internal 3.5-inch bays, which is more than sufficient. Located on the case's rump is a power supply slot that accepts either a redundant power supply or a standard ATX unit. Interior cooling is achieved with 80mm fans mounted on the front and top; two optional rear 80mm fans bring the total up to four.

With its classy construction, room for growth, and superb cooling system, the Nimiz is a power-user's dream come true.



The Gaming Bomb possesses features you'd find in cases costing twice as much.

Chenbro PC6166

MAXIMUM PC VERDICT

9

+ ALIEN QUADRILOGY

Screwless design, support for different size fans, useful front I/O port, affordable.

- ALIEN PROBE

Flimsy plastic arms on the screwless PCI card locks, no motherboard tray.

\$45, www.chenbro.com.tw



SilverStone Nimiz

MAXIMUM PC VERDICT

9

+ CRISTAL

Excellent features, sturdy construction, tastefully appointed.

- COOKS

Magnets that keep the front doors shut are too weak.

\$285, www.silverstonetek.com

Mouse Miasma

Two mice offer unique features, but unique isn't always good

This month we pit an old classic, recently reborn mouse against an innovative newcomer. Originally introduced as the Razor Boomslang more than three years ago, the Sniper Boomslang 2100 offers pixel-perfect accuracy using a traditional ball mechanism. That's right, boys and girls, there's no optical mumbo-jumbo here.

The highly novel Nyko AirFlo mouse, on the other hand, aims to increase your mousing stamina with air-conditioned comfort.

—WILL SMITH

Nyko AirFlo Mouse

At first glance, the AirFlo mouse looks like nothing more than a standard three-button optical jobbie. It's when you plug it in and start using it that you notice a difference. The mouse pulls air into the sides and blows it out through a pattern of holes on the top, where your palm rests. While the AirFlo's internal fan doesn't move much air, the effect is apparent. A switch on the mouse's belly lets you adjust the fan speed or turn it off entirely.

Those holes on the side aren't for speed. No siree. They're part of AirFlo's state-of-the-art palm ventilation system.

To test the AirFlo, we arranged an intense gaming session in the lab, to be attended by Greg Vederman, an editor at sister magazine *PC Gamer*, and by far the sweatiest person we know. After an action-packed hour of *Divine Divinity*, the Vede praised the AirFlo's dehumidifying powers. "Normally I'm a sweaty pig, but the AirFlo mouse

keeps my hand nice and dry." We'll take his word for it.

In addition to its unique physical comforts, the AirFlo delivers speed and accuracy. Its 850dpi optical sensor is as good as any we've tested. It consistently tracks our position perfectly, no matter how quickly we move the mouse.

Although the AirFlo mouse has an ambidextrous design, it's restrictive to people who want more than two buttons and a mouse wheel. But we really don't expect more than the basics in a mouse this price.

AirFlo Mouse

MAXIMUMPC VERDICT

9

+ STIRRED

Cool air on our fingers makes us happy.

- SHAKEN

No side buttons doesn't cut it these days.

\$40, www.nyko.com

BFG Technologies Sniper Boomslang 2100

Many, many moons have passed since we last reviewed a mechanical mouse, and with good reason. Optical mice eliminate many of the pitfalls that plague ball mice, such as the frequent need to clean the roller and a penchant for imprecise tracking on uneven surfaces. But the original and much beloved Boomslang emerged at a time when optical mice weren't yet sensitive enough or fast enough for gaming, a time when gamers were clawing and scraping for any device that would give them a slight edge in shooters.

This new model is essentially identical to its sleek-looking predecessor. It has the same five-button ambidextrous design—the scroll wheel doubles as the center button—and the ball still resides in the same odd place, directly



The more things change, the more they stay the same. It's the reincarnated Razor Boomslang 2100, complete with a poorly placed ball.

under the palm. Sensitivity is great, and the mouse's accuracy is pixel-perfect, as advertised. In fact, the Boomslang's movement felt even smoother than that of an optical mouse.

The problem is that using the Boomslang for extended periods of time is terribly uncomfortable. The mouse's flat design and oversized buttons feel awkward and ill-conceived. And the hypersensitive buttons are so twitchy that your fingers are likely to accidentally depress one or all at the slightest touch. Furthermore, there's the mouse ball's illogical location. Most mousers use their wrists and fingers to move the cursor on-screen from side to side and up and down, but because the Boomslang ball is positioned so low on the mouse, it takes full-on arm movement to get the cursor to budge!

We know there's an irrational handful of Boomslang enthusiasts out there who'll be thrilled with the product's return. To them, we say, "better you than us."

Sniper Boomslang 2100

MAXIMUMPC VERDICT

6

+ BOW-WOW

High resolution and great precision are terrific in games.

- MEOW

Goofy design makes us wonder if the engineers who designed it are trackball users.

\$80, www.bfgtech.com

Photo Software Pileup

Toss out your slide projector and poor narrative skills—these three apps take digital photo shows to creative new heights

A captive audience is one thing, but why force your friends and family to sit through two hours of Ektachrome slides from your summer vacation in Thailand, when you can hand them a DVD package they can view on their own time? This month we look at three digital slide-show apps that promise to turn your megabytes of digital memories into a compelling documentary complete with narration and soundtrack.

—GORDON MAH UNG

3D-Album

We have to admit that when we first saw *3D-Album* at the recent Comdex show in Las Vegas, we were mesmerized by the software's



In *3D-Album*, you can map your pictures onto virtual towels hanging in the jungles of Borneo. That is, if you're into that sort of thing.

image-mapped balloons and spinning, blinking, whirling animations. But after playing with the application in a non-Vegas setting, we're inclined to believe that the jet lag or martinis impaired our earlier judgment.

3D-Album is quite a departure from the standard slide-show maker. Indeed, the package's key selling point is the addition of the third dimension. Images can be mapped onto cubes, clock faces, or into virtual photo albums with pages that actually turn. Approximately two dozen 3D effects are included with the software; dozens more are available for free at Micro

Research's web site.

Unfortunately, while the concept is unique, the 3D effects are cheesy and more suited to a 13-year-old girl than a 30-something hard-boiled magazine editor. We felt embarrassed showing our presentations to the *Maximum PC* staff. And for good reason—derisive hooting and hollering ensued when our vacation photos appeared mapped onto spinning balloons.

Making matters worse, once you've collected your files and chosen a particular 3D effect, you're forced to use it throughout your entire presentation. While you can stitch together multiple presentations for variety, a common-sense approach would have allowed the use of multiple transition types within a single production. Incorporating audio into a slide show is executed in a similarly confining and nonintuitive manner. Rather than simply choosing the songs you want, you have to create a new folder of MP3 or WAV files outside the program.

When your package is ready to go, the program allows you to create an executable, zip, native "presentation" file, or screen saver. In yet another confounding twist, the self-extracting executable you can distribute to friends requires the download of a 1.5MB plug-in. Why not embed everything into the executable? If you want your presentation on a DVD, you must use a second application that converts the *3D-Album* file into a video file. The app has no actual burning capabilities.

We feel let down by *3D-Album*. With a new interface, more

sophisticated effects, and drastically improved usability, this app could be a diamond, but right now it's a lump of coal. A commercial version of *3D-Album* has far more features and controls, but at \$300 it's not for the casual user.

MemoriesOnTV 2.0

If you've ever seen a Ken Burns documentary on PBS (*The Civil War*, *Baseball*), you know just how emotionally evocative a slow-motion pan or zoom on a photograph can be when synchronized with a soundtrack. *MemoriesOnTV 2.0* touts its pans, zooms, and fades as the "Ken Burns Effect," and allows you to use such devices when creating your own photo album.

The interface for *MemoriesOnTV* is fairly straightforward: Drag your images into the import section; select Zoom or Pan, along with a transition effect; grab the audio track from anywhere on your PC; and boom, you're ready to go. You also have the option of customizing the pans and zooms on each individual image by selecting the file and indicating where you want the zoom/pan to start and where you want it to end.

Unlike the cumbersome *3D-Album*, an abundance of features makes life easier in *MemoriesOnTV*. For instance, you're given the ability to automatically synchronize your audio track with your images. If your photos take five minutes to display and you have six minutes of audio, *MemoriesOnTV* will automatically slow down the transitions to make the slide show end on the last note of the audio track.

Also unlike *3D-Album*, *MemoriesOnTV 2.0* includes a burning engine. Should your optical drive not be supported, the app lets you switch to the *Nero* drivers to write to your DVD drive instead. If you're unhappy with the MPEG2 encoder (we weren't), you can switch to a *TMpGEnc* encoder if you have one.

3-D Album

MAXIMUM PC VERDICT

6

GOUDA

See your digital images mapped onto a 3D object.

LIMBURGER

Tacky 3D effects, too few options, clumsy interface.

\$60, www.3d-album.com



By precisely controlling the panning of our images in *MemoriesOnTV*, we were able to create the kind of heart-tugging moments PBS documentary producer Ken Burns has made famous.

pans and/or zooms. Because *PhotoStory* handles these motions automatically, you can't, say, start with a tight shot of a person's face and gradually zoom out. Also, like *MemoriesOnTV*, there aren't enough transition effects to choose from.

If you can do without the Ken Burns Effect, you'll probably be happiest with *PhotoStory*. In addition to its excellent audio controls, it also gives you the greatest control over exporting video. Using the Ligos' *GoMotion* encoder, you can adjust video and

We do have some quibbles. We'd like to see a timeline as well as the ability to fine-tune the synchronization of transitions and/or pans with the audio track. Part of the Ken Burns magic is the precise timing of audio and photo transitions. With *MemoriesOnTV*, it's hit or miss. The package should also support more than a single audio stream at a time; this way you could mix a narrative track or sound effects with music. (At press time, we received a beta version of *MemoriesOnTV* 2.1, which includes a timeline, improved video encoding, and a number of other improvements.) Another boon would be a way to fast forward through album previews. As it is, if you change one transition located at the end of a five minute slide show, you have to watch the entire presentation just to see that particular change. Finally, we think there should be more special effects. While the present options, which include water and smoke effects, are well done, there simply aren't enough to, say, use a different

effect for each transition in a show, if that were your preference.

Of the three apps reviewed here, *MemoriesOnTV* 2.0 is our favorite. There's room for improvement, but if you want to use sophisticated techniques to control the presentation of your digital images, it can't be beat.

PhotoStory on CD & DVD

Of the three software developers in this brouhaha, Magix employs the most people, and it shows in the polished and feature-rich *PhotoStory* on CD & DVD.

For starters, the application bundles basic image-editing capabilities that let you retouch photos or adjust a high-resolution picture so it won't shimmer on some televisions. And of the three packages evaluated here, *PhotoStory* gives you the most control over syncing your photos with audio tracks. *3D-Album* and *MemoriesOnTV* neglect this area, but it's incredibly important if you want to adjust the pace of your presentation to faster- or slower-paced music.

We also like having the ability to use two audio tracks in a slide show. This way, you can run a song and then add a track with narration over it. *PhotoStory* can even remove hissing or humming from audio tracks.

PhotoStory's biggest weakness is that it doesn't let you choose where the camera motion starts when you're choreographing



audio bitrates. And a plethora of video-quality dials allows you to finesse a presentation's appearance to your liking. We compared output from *MemoriesOnTV* with *PhotoStory* and found that, while the former looked pretty good, *PhotoStory*'s video looked sharper.

If we had our druthers, we'd merge *MemoriesOnTV* with *PhotoStory* to get the best of both worlds: excellent controls over zooming and panning, and robust audio features.

***PhotoStory* on CD & DVD offers powerful and precise control over audio, and even lets you run two tracks at a time.**

Albatron K8X800 Pro II

MAXIMUM PC VERDICT

8

+ THE CIVIL WAR

Fantastic Ken Burns Effect and amazing ease of use.

- GODS & GENERALS

Handling of audio needs to be improved, and more transitions would be welcome.

\$50, www.picturetotv.com

Albatron K8X800 Pro II

MAXIMUM PC VERDICT

8

+ 300MM F/2.8

Excellent audio capabilities and MPEG encoder.

- 300MM F/5.6

Doesn't let you control panning or zooming.

\$40, www.magix.com

Lords of EverQuest

EQ + RTS = Zzzzzzz

It's not that *Lords of EverQuest* is a particularly awful game. It's just a blindingly, grindingly mediocre one. In a PC scene positively bulging with quality real-time strategy games, there's no reason for it to exist other than to create another box adorned with the *EverQuest* logo. If you have even a passing interest in RTS games, chances are you have at least two or three titles (some of them possibly several years old) that are more challenging, more fun, and more complex.

The particulars of this RTS are not particularly important if you're familiar with the genre. The "three diverse factions"—Elddar Alliance, Dawn Brotherhood, and Shadowrealm—all feature units derived from the MMORPG, and are in fact little more than standard fantasy boilerplate characters like dwarves, humans, trolls, and the rest of the ersatz Tolkien pantheon. And frankly, these factions aren't all that diverse; one side plays pretty much like another.

The titular "Lords" are hero units that can level up and achieve new powers by gaining experience. Unfortunately, the Lords are a little too powerful, and begin to unbalance the game rather quickly, which reduces the strategic complexity.

Compounding these flaws, combat units possess horrid AI and limited control options. Typically, they're either charging across the map willy-nilly or getting in each others' way. Not that this matters, because the missions, spread across three intertwining and rather tedious campaigns, are mostly bland mass-and-attack or mass-and-defend affairs. Even the single-player skirmish option demonstrates the limited old-school nature of *Lords of EverQuest*: You can only create a skirmish by starting the multiplayer game and adding computer-controlled units.



Visually, *Lords of EverQuest* looks just fine, with a decent 3D engine and fairly attractive character models. But the gameplay feels horribly outdated.

It's hard to find a reason to recommend this game beyond the *EverQuest* setting, and even that adds little since the story is boring and the units are largely generic.

—THOMAS L. McDONALD

MAXIMUM PC VERDICT

4

+ HECKA

It doesn't crash. Much.

- HELLA

Routine and bland, with rotten unit AI and controls.

\$50, www.lordsofeverquest.com

Beyond Good and Evil

The first sleeper hit of the year has arrived



Does this game's name ring a bell for you? It didn't for us either, so we looked it up. Turns out it's from a book by Fredreich Nietzsche, *Beyond Good and Evil: Prelude to a Philosophy of the Future*. Yeah. Kooky name and heady intellectualism aside, *Beyond Good and Evil* is a console platform title that's been ported to PC. This is evidenced by the absence of the mouse cursor in any of the game's menus. Although other signs of console-itis are plentiful, the game is so good we're overlooking such minor nuisances.

The story has you playing as a feisty action photographer named Jade, whose hometown is under siege by a faceless corporation that has begun abducting her fellow citizens. It's up to Jade to save her village—and humanity—by uncovering the conspiracy and putting an end to the evil-doing once and for all.

This is typical platform fare, but dull moments are few and far between. In addition to the standard puzzle navigation, stealth missions, and hand-to-hand combat, Jade also gets to compete in a series of hovercraft races. The best part: no jumping puzzles! Like any platform title, *Beyond Good and Evil* is centered on exploration; but as an added incentive to explore, Jade is tasked with cataloging the world's life forms by photographing them and uploading them to a science center. She gets paid for each picture she takes, and can use the money to buy healing items, hovercraft upgrades, and so forth. It's an interesting and unique twist that makes exploration not only fun but ultimately rewarding. The only flaw is that the clunky console-based interface makes it difficult to manipulate the collection of maps and goodies Jade gets her hands on.

Throughout her adventure, Jade is accompanied by a wacky cast of



Jade gets ready to break off the end of her Dai-Jo staff in this insect's behind—if she can find it. It's always tough telling the front from the back with insects.

characters who help her in combat and assist her in completing some of the puzzles.

Overall *Beyond Good and Evil*—which we found reminiscent of the cult classic *MDK 2*—is an excellent game. Even if you're not a fan of platform games, it's a kick.

—JOSH NOREM

MAXIMUM PC VERDICT

9

+ PLATFORMS

Interesting story, great characters, lots of fun action elements.

- TRAP DOORS

Confusing inventory-management system, console-based menus.

\$40, www.beyondgoodandevil.com

Counter-Strike: Condition Zero

How can our favorite 3D shooter go out like this?



To many PC gamers, *Counter-Strike* is like a dear old friend who's beginning to grow long in the tooth. Forgive us for getting nostalgic and weepy-eyed, but the game always reminded us of playing army as a kid, but without having to yell "bang! bang!" or "I shot you, you're dead! Quit cheating!" Actually people still do that in CS. Still, what began life as a free counter-terrorism themed modification for *Half-Life* remains one of our favorite games of all time.

Counter-Strike's near-perfect game design, solid net-play code, and evolving play mechanics strike a perfect balance between team play and fast action, and have hooked millions of gamers. So what then to make of *Condition Zero*, the long, long-awaited single-player expansion that was supposed to freshen and revitalize *Counter-Strike*? Not much. Like a 40-year-old punch-drunk boxer, *Condition Zero* lacks focus and clarity. It sure doesn't feel like it was worth the wait.

Condition Zero is essentially two games packed into one. The first is simply the latest iteration of an already great game, but with newer, cleaner textures, brushed up maps, an improved spectator system, a few new items (like the tactical shield), and some new, cheaper assault rifles. Better than this is a well-made single-player mode that allows you to play through a series of maps in a tournament ladder of sorts, with specific map achievements required to move on. Moving on wins you points, which you then spend to recruit new teammates with better skills. The bot AI is actually quite amazing and reflects behaviors seen in real-world CS players. For example, bots will camp bombsites, work in tandem, and even do silly things like break into knife fights when they're the last two

New to the long-awaited single-player version of *Counter-Strike*: a more traditional story-driven FPS.

players in a round.

The second half of the game is a more traditional story-driven FPS, based on the same terrorist-counter-terrorist subject matter, but using all new models and linear maps that reflect a completely different visual style. Entitled *Condition Zero: Deleted Scenes*, this is a mostly solitary trek through terrorist-infested areas full of scripted events and traditional objectives, instead of the usual round-based action. Unfortunately, it's no *Half-Life*, but rather a mediocre total conversion mod with a big-money budget behind it.

Condition Zero is not an entire waste of time, but it's not exactly worth the three-year wait. Long-time *Counter-Strike* fans should balk at paying money for what's essentially a free download with a weak first-person shooter mod tacked on, and new fans to the series should just stick to the downloadable version, which offers much more exhilarating gameplay.

Here's hoping that someday we see a *Counter-Strike 2* that really shines. It's the least gamers deserve for all their loyalty.

—TOM PRICE

MAXIMUMPC VERDICT

6

+ HALF-LIFE 2 IN JUNE

Nice tune-up of a classic game.

- HALF-LIFE 2 IN NOVEMBER

Totally unnecessary—and un-fun—addition of the Deleted Scenes campaign.

\$50, www.counter-strike.net



Michael Johnson couldn't have picked a better way of expressing himself to his beloved than by proposing marriage with a case-mod.

For one thing, it says he's a romantic. You'd have to be to even fathom such folly. He's devoted, having spent every lunch hour for three weeks at work on the project in his parents' garage, where his girlfriend wouldn't discover it. His attention to detail is evident, what with the way he meticulously covered every wire with white-wrap heat-shrink and strung pearls from a crafts store—to say nothing of the mini ribbon roses and “lacy wedding-ish stuff” that lovingly accents the case. He's handy, that's for sure. Besides adding both a front and side window, he Dremel-etched on the latter “Will you do me the honor?” And it's clear that Johnson's in touch with his feminine side.

In addition to that, Johnson proves his wisdom. The top tier of the faux wedding cake (which he of course hand crafted), opened to reveal a good-size rock.

What girl wouldn't be won over? According to Johnson, “it worked like a charm.” He and Rachel are planning a summer 2005 wedding.

“Maybe I'll convince her to get a wedding cake shaped like a PC,” Johnson jokingly adds.

A Photoshop document taped to the inside of the case window served as a guide for Johnson's etching. “My hand kept falling asleep holding the Dremel steady, so I had to take breaks to get the blood flowing.”



Is the future bride more interested in modding now?

“Yes, but probably just as a spectator,” says Johnson. “Will we be the first husband-and-wife modding team? Probably not,” he adds.



“Hehe. Now she can look at the PC everyday and be reminded of what a nerd she is marrying,” says the happy husband-to-be.



Johnson extended the marriage motif to the desktop, where a picture of the engagement ring greets Rachel whenever she boots her PC.

For his winning entry Michael Johnson wins **\$1,000** and a 12-pack of BAWLS to fuel his late nights of modding. You can win too! See previous page for contest details.

